TABLE OF CONTENTS

SECTION PAGE

1.0 INTRODUCTION 1 1/A7

2.0 PROBLEM NO. 1 - MACH 3, JP FUELLED TURBOJET POWERED VEHICLE RANGE DETERMINATION 2 1/A8

2.1 Vehicle Characteristics 2 1/A8
2.2 Mission Characteristics 2 1/A8
2.3 Propulsion Characteristics. 3 1/A9
2.4 Trajectory Details 8 1/A14
2.5 Aerodynamic Characteristics 9 1/B1

3.0 PROBLEM NO. 2 - MACH 14 HYDROGEN FUELLED TURBOJET/ SCRAMJET PROPULSION RANGE DETERMINATION 48 1/D12

3.1 Vehicle Characteristics 48 1/D12
3.2 Mission Characteristics 48 1/D12
3.3 Propulsion Characteristics. 49 1/D13
3.4 Trajectory Details. 53 1/E3
3.5 Aerodynamic Characteristics 54 1/E4

4.0 PROBLEM No. 3 - MACH 6 HYDROGEN FUELLED TURBORAMJET WITH ENGINE SCALING 74 1/F10

4.1 Vehicle Characteristics 74 1/F10
4.2 Mission Characteristics 74 1/F10
4.3 Propulsion Characteristics. 75 1/F11
4.4 Trajectory Details. 82 1/G4
4.5 Aerodynamic Characteristics 83 1/G5

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NSEG - A SEGMENTED MISSION ANALYSIS PROGRAM FOR LOW AND HIGH SPEED AIRCRAFT

Volume III - Demonstration Problems

D. S. Hague and H. L. Rozendaal

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16. Abstract

Program NSEG is a rapid mission analysis code based on the use of approximate flight path equations of motion. Equation form varies with the segment type, for example, accelerations, climbs, cruises, descents, and decelerations. Realistic and detailed vehicle characteristics are specified in tabular form. In addition to its mission performance calculation capabilities, the code also contains extensive flight envelope performance mapping capabilities. For example, rate-of-climb, turn rates, and energy maneuverability parameter values may be mapped in the Mach-altitude plane. Approximate take off and landing analyses are also performed. At high speeds, centrifugal lift effects are accounted for. Extensive turbojet and ramjet engine scaling procedures are incorporated in the code.

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PREFACE

The NSEG program was originally constructed by Mr. L. H. Leet of the United States Air Force Aeronautical Systems Division, Wright-Patterson Air Force Base. The code was subsequently modified and extended by Aerophysics Research Corporation under contract F33615-73-C-3039. The current version of the NSEG (Version III) extends the program applicability to higher speed (hypersonic turbo-ramjet) aircraft. It also includes various improvements generated by Mr. David T. Johnson of the Air Force Flight Dynamics Laboratory. The authors wish to extend their thanks to Mr. Walter Vahl of NASA for his extensive assistance during formulation and checkout of the turbo-ramjet propulsion system model now available in NSEG. The analytic basis of the turbo-ramjet model is due to Mr. Vahl.

Mr. D. S. Hague of Aerophysics Research Corporation served as project leader for the present study. Dr. H. L. Rozendaal provided specialist support in the fields of propulsion system analysis and computer sciences. Mr. R. T. Jones, formerly of Aerophysics Research Corporation, has also made significant contributions to the NSEG code in studies preceding the present one.

Additional details and copies of the program deck can be obtained from NASA Langley Research Center.

This report is Volume III of three volumes. Total program documentation consists of

Volume I.	Theoretical Development
Volume II.	Program User's Manual
Volume III.	Test Problems

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NSEG: A SEGMENTED MISSION ANALYSIS PROGRAM FOR LOW AND HIGH SPEED AIRCRAFT

D. S. Hague and H. L. Rozendaal
Aerophysics Research Corporation

1.0 INTRODUCTION

This report considers three representative trajectory design/engine scaling problems capable of solution on the NSEG program. For each problem the document presents an overall description of vehicle and trajectory characteristics, data set-up for the NSEG code, and computer output for the problem considered. The three problems consist of

1. Problem No. 1. Mach 3 JP fuelled turbojet cruise vehicle range determination. Vehicle characteristics are fixed as are all mission segments except the cruise leg. The cruise leg fuel consumption is to be varied to determine overall vehicle range for a total amount of fuel consumed over take-off, climb-acceleration, cruise, descent, and diversion legs.

2. Problem No. 2. Mach 14 turbojet/scramjet hydrogen fuelled propulsion vehicle for sub-orbital missions. Fixed vehicle and mission profile total mission range to be determined for a specified end of cruise weight.

3. Problem No. 3. Mach 6 dual mode turbo-ramjet powered vehicle using hydrogen fuel. Mission profile is fixed and engine sizes to be scaled for transonic margin and thrust margin at cruise. Total range (excluding alternate field) is fixed as is the empty weight. The vehicle initial weight is to be determined subject to these constraints.

It should be noted that the problems selected in no way exhaust all options of the NSEG program. In particular the Rutowski-like trajectory optimization modes are not exercised; neither are the flight performance contour charts used. Within these limitations the three problems studied are considered to be representative of the mission analysis/engine scaling problems which NSEG is designed to solve. The remainder of this report describes in sequence the problem statement and data, deck setup, and solution for Problems 1, 2, and 3. Provisions of NASA Publication NPD-2220.4 have been waived for the listing of computer output. U. S. Customary Units are also employed in problem descriptions since the program will only accept data in these units at the present time.

2.0 PROBLEM NO. 1 - MACH 3, JP FUELLED TURBOJET POWERED VEHICLE RANGE DETERMINATION

2.1 Vehicle Characteristics

Turbojet propulsion, 4 engines, JP fuel (F/A = .0678)

$M_{cruise} = 3$

Gross take-off weight = 75000 pounds

Operating weight empty = 421,780 pounds

Thrust loading = .5

Vehicle reference area = 8983.8 ft^2

Wing semi-thickness angle = $-.7^o$

Inlet initial wedge angle = 6^o

Engine exhaust field pressure (P_N) = underwing pressure (p_1)

Total range to be determined

2.2 Mission Characteristics

(1) Take-off to clear 50 ft. obstacle (using NSEG take-off aerodynamics)

(2) Accelerating climb at max. power along prescribed path until q = 1000 psf reached (≈M = 2.5)

(3) Accelerating climb at max. power along constant q = 1000 psf path to M=2.9 (altitude = 57540 ft.)

(4) Accelerating climb at max. power to M=3, altitude = 65,932 ft. (linear M-h path)

(5) Constant altitude, constant C_L cruise (throttled turbojets)

(6) Descent at max. L/D to M=.8, altitude = 20,000 ft.

(7) Loiter 5 min.

(8) Constant $M = .8$ climb to 45,000 ft.

(9) Constant altitude cruise for 200 N.M. at $M = .8$.

(10) Descent at max. L/D to $M = .8$, $h = 20{,}000$ ft.

(11) Loiter 5 min.

(12) Descent at max. L/D to $M = .6$, altitude = 1000 ft.

(13) Go around 360°, 1.8g

(14) Descent to 50 ft. obstacle

(15) Landing (Use NSEG landing aerodynamics)

2.3 Propulsion Characteristics

Inlet capture ratio (A_c/A_i) vs. Inlet flow field Mach number (M_i)

M_1	A_c/A_i
0	1.0
.3	.8707
.54	.7347
.7	.6961
.8	.6168
.9	.5986
1.0	.5941
1.2	.6077
1.6	.6395

2.0	.7347
2.2	.8345
2.4	.8685
2.7	1.0
8.	1.0

Inlet pressure recovery (p_{t_3}/p_{t_1}) vs. Inlet flow field Mach number (M_1)

M_1	p_{t_3}/p_{t_1}
0	1.0
.3	1.0
.4	.9885
.65	.972
.9	.972
1.0	.9707
1.1	.9682
1.2	.9645
1.25	.9604
1.34	.9495
1.45	.9288
1.6	.892
1.61	.92
1.84	.92
2.1	.9169
2.4	.9117
3.	.898

Turbojet corrected airflow ($w \frac{\sqrt{\theta}}{\delta}$) vs. Inlet flow field total temperature (T_{t_1}) for base size engine

T_{t_1} (°R)	$w \frac{\sqrt{\theta}}{\delta}$ (#/sec)
400	615
435	624
500	627
510	626
520	620
540	598
580	554
620	514
670	471
740	421
800	391
900	351
1000	318
1200	258

Turbojet gross thrust per pound of airflow (F_g/w_a) vs. engine pressure ratio ($\log_{10} P_{t_3}/P_N$) and inlet flow field total temperature (T_{t_1})

$\text{Log}_{10}\ P_{t_3}/P_N$	$T_{t_1} = 390^\circ R$	$T_{t_1} = 1200^\circ R$
-.0458	99.5	99.5
0.	99.5	99.5
.1139	114.0	114.0
.1761	120.5	120.5
.2553	127.5	127.5
.3010	131.2	131.2
.3979	137.3	137.3
.4771	141.6	141.6
.5441	144.7	144.7
.6532	148.8	148.8
.7404	151.5	151.5
.8451	154.1	154.1
1.0	157.0	157.0
1.301	161.3	161.3
1.6021	164.9	164.9
	$F_g/\dot{w}_a$, (lbs./lb. per second)	

Turbojet fuel-air ratio ($\dot{w}_f/\dot{w}_a$) vs. Inlet flow field total temperature (T_{t_1})

T_{t_1}, °R	$\dot{w}_f/\dot{w}_a$
400	.0413
440	.0427
480	.04665
508	.0489
520	.04869
560	.04818
600	.04756
760	.04512
1200	.03835

Turbojet throttling table at cruise conditions ($M_\infty = 3$); ($F_N/F_{N_{max}}$) vs. (SFC/SFC_{max})

($F_N/F_{N_{max}}$)	(SFC/SFC_{max})
0	1.0
.3991	.7701
.45	.76
.5	.762
.55	.773
.7	.838
.9	.943
1.0	1.0

2.4 Trajectory Details

Trajectory segment (2) prescribed path follows.

M_∞	Altitude, ft.
M at 50' obstacle	50
.5	3000
.6	5000
.7	11500
.75	16000
.8	21500
.85	24000
.9	27000
.95	29000
1.0	30000
1.1	32700
1.15	33500
1.2	34500
1.3	36500
1.4	38500
1.5	40500
1.6	41500
1.8	44500
2.0	47200
2.2	49000
2.4	51000 ($q = 936.4$ psf)
2.6	52971 ($q = 1000$ psf)

2.5 Aerodynamic Characteristics

Linear aerodynamic characteristics are based on these equations:

$$C_D = C_{D_o} + K\,(C_L - C_{L_o})^2$$

$$C_L = C_{L_\alpha}\alpha + C_{L_{\alpha=0}}$$

where

C_{D_o} = minimum drag coefficient

K = drag due to lift factor

C_{L_o} = C_L at minimum drag coefficient

C_{L_α} = lift curve slope

$C_{L_{\alpha=0}}$ = lift coefficient at $\alpha = 0^o$

M_∞	C_{D_o}	C_{L_o}	$C_{L_{\alpha=0}}$	C_{L_α}	K
0.	.008601	0.	0.	.052	.20
.4	.008601	0.	0.	.05465	.20
.6	.008601	0.	0.	.05460	.20
.8	.008801	0.	0.	.05795	.205
.9	.01102	0.	0.	.06500	.209
.95	.01273	0.	0.	.06460	.212
1.	.01522	0.	0.	.06280	.216
1.1	.01210	0.	0.	.06000	.225
1.2	.01191	0.	0.	.05750	.236
1.3	.01150	0.	0.	.05580	.250
1.4	.01100	0.	0.	.05320	.267
2.0	.009276	0.	0.	.04320	.390
2.5	.008055	0.	0.	.03620	.490
3.0	.007318	0.	0.	.03050	.583
3.5	.005681	0.	0.	.02660	.674

```
                              TEST PROBLEM NO. 1
      .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
      .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


  STCASE/TABSIZ/
            TABLE SIZES FOR EACH TABLE USED IN THIS RUN
  ATAB46(60)
  ATAB52(50)
  CLATAB(60)
     CLZTAB(20)
  ETAB03(40)
  ETAB04(40)
  ETAB05(40)
  ETAB06(50)
  ETAB07(25)
  ETAB09(20)
  MTAB01(500)
  MTAB02(500)
  END
            TOTAL TABLE SIZE FOR THIS RUN IS  1477
```

```
                                TEST PROBLEM NO. 1
                 .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                 .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


          STCASE/DATA1/
     ...
     ...
     ...          DATA FOR PRINT-OUT CONTROL
          IPDICN=1.     $ PRINT DATA BASE DIRECTORY
          IPDICN=0.     $ DO NOT PRINT DATA BASE DIRECTORY
     ..
     ...        CONTROLS PRINT OUT OF MISSION SEGMENTS
          IPSEG=1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,0,
     ...
          IPATMC=1.     $ GENERATE TABULAR LISTING OF ATMOSPHERIC PROPERTIES
          IPATMC=0.     $ DO NOT GENERATE TABULAR LISTING OF ATMOSPHERIC PROPERTIES
          IPTZIN=0.     $ DO NOT PRINT TERM ARRAY AS THE INPUT DATA IS PROCESSED
          IPTZIN=1.     $ PRINT THE TERM ARRAY FROM FILLTZ
         ICDMMP=0.      $DO NOT PRINT DUMPS DURING CLIMB
     .                   AS THE INPUT DATA FOR EACH
     .          .        MISSION SEGMENT IS PROCESSED
          IPENDS=0.     $ DO NOT PRINT SCALED ENGINE DATA
          IPENDS=1.     $ PRINT SCALED ENGINE DATA
          IPENDR=0.     $ DO NOT PRINT RAW ENGINE DATA
          IPENDR=1.     $ PRINT RAW ENGINE DATA
          IPTZXX=1.     $ PRINT TERM ARRAY AS EACH MISSION SEGMENT IS STARTED
          IPRGSV=1.     $ PRINT THE RG SAVE ARRAY FROM EACH MISSION SEGMENT
     ...
     ...           TAKE-OFF AND LANDING DATA
     ...
       SREF=4937.0, $ WING REFERENCE AREA (FT**2)
       SPLG  =200.0,$     FLAT PLATE AREA OF GEAR (SF)
       CDPLG =0.5,$       FLAT PLATE DRAG COFF OF GEAR
       AG    =.25,$       GROUND ROLL BODY ANGLE (DEG)
       AMAXG =12.0,$      MAXIMUM GROUND ROTATION ANGLE (DEG)
        WINCID=-.7,  $     WING INCIDENCE  (DEG)
       ARTHEO=3.0,$       THEORETICAL WING ASPECT RATIO (SPAN**2/SREF)
       WSLEFC=37.0,$      WING LEADING EDGE SWEEP ANGLE (DEG)
        CLATOT=.057,  $  TOTAL LIFT CURVE SLOPE  (PER DEGREE)
        CL0=0.0,  $  LIFT COEF AT ZERO ANGLE OF ATTACK
       DFK   =0.189,$     INDUCED DRAG FACTOR
       XMAXG =7510.0,$    MAXIMUM GROUND ROLL (FT) IGNORED, IF ZERO
       BFOBEX=0.46,$      FLAP SPAN TO EXPOSED WING SPAN RATIO
       CFOCAV=.25,$       AVERAGE FLAP CHORD TO WING CHORD RATIO
       SPCHUT=0.0,$       FLAT PLATE AREA OF DRAG CHUTE (SF)
       CDCHT=0.0,$        FLAT PLATE DRAG COEFF OF CHUTE
       GRNCFT=0.025,$     GROUND ROLL FRICTION COEFFICIENT TAKE-OFF
       FLAPDT=20.0,$      FLAP DEFLECTION (DEG) TAKE-OFF
       GRNCFL=.35,$       GROUND ROLL FRICTION COEFFICIENT LANDING
       FLAPDL=45.0,$      FLAP DEFLECTION (DEG) LANDING
       FNL   =0.0,$       LANDING THRUST (LB)
    ...    LOW ASPECT RATIO TAKE-OFF VALUES
       ARTHEO=2.0,$       THEORETICAL WING ASPECT RATIO (SPAN**2/SREF)
       AMAXG =20.0,$      MAXIMUM GROUND ROTATION ANGLE (DEG)
       WSLEFC=60.0,$      WING LEADING EDGE SWEEP ANGLE (DEG)
       CFOCAV=.15,$       AVERAGE FLAP CHORD TO WING CHORD RATIO
```

```
                              TEST PROBLEM NO. 1
         .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
         .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


   CD0   =0.0086, $ DRAG COEFF AT ZERO LIFT
   TRATIO=.20,$      WING TAPER RATIO
    HTO=0.,  $ ALTITUDE AT START OF TAKEOFF ROLL
 ...
 ...          GENERAL DATA
       PLWINT=100000.0,
       GLEVEL=1.0,
       AVOID1=0,
       AVOID2=0,
   AMTO=.2,
       PSET=1,
       HI=0.0,
       HF=40000.0,
       AMI=0.2,
       AMF=0.825,
       H0=0.0,
       HF=35000.0,
       TMC=9.29,
       AME=0.767,
 ...
 ...
 ...          AERO DATA
   RCSC=100.0,
     CASE = 1,    $ SINGLE SYSTEM.
     INCAER = 9,
     INDA46 = 1,
     INDA52 = 1,
     INDCL7 = 0,  $ CL AT ZERO ANGLE OF ATTACK IS ZERO.
     INDA58 = 0,  $ CL MIN IS IDENTICALLY ZERO.
     IA46X  = 2,  $ NO. ALT
     IA46Y  = 15, $ NO. M
     ATA946 =  0., 500000.,    $ ALTITUDES FOR LINEAR AERO CD0
               0.,.4,.6,.8,.9,.95,1.,1.1,1.2,1.3,1.4,2.,2.5, $MACHS
               3.,3.5,
               .009691,.008601,.008601,.008671,.008691,.009601,
               .009801,.009801,.01102,.01102,.01273,.01273,
               .01522,.01522,.01210,.01210,.01191,.01191,
               .0115,.0115,.011,.011,.009276,.009276,.008055,.008055,
               .007318,.007319,.005601,.005601,
 ...  K21 VS MACH
     ATA95( = 15 ,0.,.2,.4,.2,.6,.2,.8,.205,.9,.209,.95,.212,1.,.216,
              1.1,.225,1.2,.236,1.3,.25,1.4,.267,2.,.39,2.5,.49,
              3.,.583,3.5,.674,
 ...  LIFT CURVE SLOPE VS. ALT AND MACH
     INDCLA = 1,
     ICLAX = 15,    $  NO. MACHS
     ICLAY = 2,    $  NO. ALTS
     CLATA9 = 0.,.4,.6,.8,.9,.95,1.,1.1,1.2,1.3,1.4,2.,2.5,3.,3.5,
              0.,500000.,
 ...    ALT = 0.
              .052,.05465,.0546,.05795,.065,.0646,.0628,.06,.0575,
              .0558,.0532,.0432,.0362,.0305,.0266,
                                  TEST PROBLEM NO. 1
                ..... TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                ..... CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


...    ALT = 500000.
               .052,.05465,.0546,.05795,.065,.0646,.0670,.06,.0575,
               .0558,.0532,.0432,.0362,.0305,.0266,
...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ..
...
...
...           ATMOSPHERIC DATA
       INDATM=9,
       INDATM=3,
...
...                        DATA FOR USER SPECIFIED TEMPERATURE PROFILE
       NHG=11,
       HG=-16404.0, 0.0, 36089.01, 65617.01, 104987.0, 154199.01,
            170604.01, 200131.01, 259186.01, 291160.01, 295276.01,
       TM=577.18, 518.68, 389.98, 389.98, 411.58, 487.18, 487.18,
          454.78, 325.18, 325.18, 379.18,
       PM=3711.0839, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
...
...
...           THRUST DATA
  FF=.05,
  FPOL=1.0,
       FFLMIN=0.031,
       SFCFAC=1.05,
       NUMENG=4,
       TSIZEF=1.0,
       THRMIN=0.1,
...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ..
...                 MAX. THRUST  (CASEN = 1)
....   CHECK PROBLEM 1
     INDE01 = 0,
     INDE02 = 0,
     INDE03 = 1,
     INDE04 = 1,
     INDE05 = 1,
     INDE06 = 1,
     INDE07 = 1,
     INDE08 = 1,
     INDE09 = 0,
     INDE10 = 0,
     IE03X = 14,
     ETAB03 = 0.,.3,.54,.7,.8,.9,1.,1.2,1.6,2.,2.2,2.4,2.7,3.,
              1.,.8707,.7347,.6961,.6160,.5996,.5941,.6077,.6395,
              .7347,.8345,.8605,1.,1.,
     IE04X = 17,
     ETAB04 = 0.,.3,.4,.55,.9,1.,1.1,1.2,1.25,1.34,1.45,1.6,1.61,
              1.84,2.1,2.4,3.,
              1.,1.,.9885,.972,.972,.9707,.9682,.9645,.9604,.9495,
              .9288,.892,.92,.92,.9169,.9117,.898,
     IE05X = 14,
     ETAB05 = 400.,435.,500.,510.,520.,540.,580.,620.,670.,740.,
              800.,900.,1000.,1200.,
                                    TEST PROBLEM NO. 1
                    .... TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                    ....  [illegible]   NO IN-FLIGHT ENGINE SCALING REQUESTED.


                      [illegible]..620..590..556..516..471..421..
                      [illegible]..
          [illegible] 7.
          [illegible] 15.
          [illegible] 360..1200.. BLOWER LIMIT REDUCED ...3/13/76.. [illegible]
                      -.9655,0...1119..1/41..7954..1019..3979..4771..5661.
                      .6597..7606..9691.1..1.591.1.6071.
                      [illegible]..116..116..129.5.128.5.127.5.127.5.
                      [illegible]137.7.137.7.141.4.141.4.144.7.144.7.
                      [illegible]151.5.151.5.156.1.156.1.157..157..
                      [illegible]164.9.166.9.
          [illegible] 9.
          [illegible] 403..440..490..510..570..560..600..760..1200..
                      .0613..7677..7440..0649..96469..06010..06756.
                      .C6910..23435.
          [illegible] 2.
          [illegible] 0...9991..65..[illegible]..7..8.1..
                      1...7701..7[illegible]..771..930..963.1..
...         [illegible] OPTION
     [illegible]
       [illegible]    [illegible] DIAGNOSTIC PRINT IN ENGINE ROUTINE
     I[illegible] 0..  [illegible] AUTOMATICALLY SCALE ENGINE IN FLIGHT.
    [illegible]
       THINTJ  0.01.     MINIMUM TURBOJET THROTTLE SETTING
     [illegible]
    [illegible]0.7.   SWING INCIDENCE ANGLE (DEGREES)
     [illegible]
     [illegible]
     [illegible]
     [illegible]
     [illegible]
     [illegible]
     [illegible]
     [illegible]
     [illegible] 1707..
     [illegible]
     [illegible]
     [illegible]
     [illegible]
     [illegible]
      [illegible]
     [illegible] 1.   0  TURBOJET ENGINE ONLY OPTION
        [illegible]
```

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WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                       01/11/77          18.08.27.          PAGE    6

                                               TEST PROBLEM NO. 1
                              .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                              .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                          STCASE/WSEG/
                          TANK SYSTEM DROP AND RETURN WEIGHT STATEMENT

TANK SYSTEM  1

                      NUMBER OF TANK PAIRS  =  0

                      POUNDS DROPPED        =  0.

                      POUNDS RETURNED       =  0.

TOTAL WEIGHT FOR TANK SYSTEM 1 LESS FUEL =  0.

TANK SYSTEM  2

                      NUMBER OF TANK PAIRS  =  0

                      POUNDS DROPPED        =  0.

                      POUNDS RETURNED       =  0.

TOTAL WEIGHT FOR TANK SYSTEM 2 LESS FUEL =  0.

TANK SYSTEM  3

                      NUMBER OF TANK PAIRS  =  0

                      POUNDS DROPPED        =  0.

                      POUNDS RETURNED       =  0.

TOTAL WEIGHT FOR TANK SYSTEM 3 LESS FUEL =

TOTAL TANK SYSTEM DROP WEIGHT              =  0.

TOTAL TANK SYSTEM RETURN WEIGHT            =  0.

TOTAL TANK SYSTEM WEIGHT                   =  0.
```

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WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                       01/11/77          18.09.29.          PAGE    7

                                               TEST PROBLEM NO. 1
                              .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                              .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                          STORE SYSTEM DROP AND RETURN WEIGHT STATEMENT

STORE SYSTEM  1

                      NUMBER OF STORE PAIRS =  0

                      POUNDS DROPPED        =  0.

                      POUNDS RETURNED       =  0.

TOTAL WEIGHT FOR STORE SYSTEM 1 LESS FUEL =  0.

STORE SYSTEM  2

                      NUMBER OF STORE PAIRS =  0

                      POUNDS DROPPED        =  0.

                      POUNDS RETURNED       =  0.

TOTAL WEIGHT FOR STORE SYSTEM 2 LESS FUEL =  0.

STORE SYSTEM  3

                      NUMBER OF STORE PAIRS =  0

                      POUNDS DROPPED        =  0.

                      POUNDS RETURNED       =  0.

TOTAL WEIGHT FOR STORE SYSTEM 3 LESS FUEL =  0.

 TOTAL STORE SYSTEM DROP WEIGHT            =  0.

 TOTAL STORE SYSTEM RETURN WEIGHT          =  0.

 TOTAL STORE SYSTEM WEIGHT                 =  0.
```

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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/11/77          10.00.29.          PAGE   11

                                              TEST PROBLEM NO. 1
                               .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                               .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


... NASA TEST PROBLEM 1. NSEG VERSION III.
...
    SEGMENT(2),OPTION(21)
     OUTPUT RUN.
...   ENGINE SCALING OPTION
      PROPULSIVE MODE = DUAL
   SCALE TURBOJET--THRUST=375000..  (LBS. TOTAL)
  CRUISE MACH=3.0.  CRUISE ALTITUDE=65932..
... TURBOJET IS SCALED AT SEA LEVEL
 EXIT PRESSURE=WING PRESSURE
     AERO OPTION=1.
    END
 2.0000      0.            3.0000      .37500E+06  65932.           51000 0.                    21  1.0090      1111112111
...
      SEGMENT(3) ,OPTION(17).
      COMPUTE WARM-UP AND TAKE-OFF FUEL ALLOWANCE
      WARM-UP TIME=5.0.(MIN)
      END
 0.          0.            0.          5.0000      2.0000           51000  2.0000               17 0.             1111112111
...
      SEGMENT(4) .OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.5.
   END ALTITUDE=3000..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  .50000       3000.0      0.          4.0000      0.               51100 0.                     1 0.             1111112111
...
      SEGMENT(5) .OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.6.
   END ALTITUDE=5000..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  .60000       5000.0      0.          4.0000      0.               51100 0.                     1 0.             1111112111
...
      SEGMENT(6) .OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.9.
   END ALTITUDE=21500..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  .90000       21500.      0.          4.0000      0.               51100 0.                     1 0.             1111112111
...
      SEGMENT(7) .OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.95.
   END ALTITUDE=29300..
      PROPULSIVE MODE = DUAL
```

```
                                 TEST PROBLEM NO. 1
                    .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                    .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.

      THRUST = MAXIMUM AVAILABLE
    END
  .95000      29000.     0.          4.0000     0.                51100 0.                1 0.          1111112111
...
      SEGMENT(8) ,OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =1.5.
   END ALTITUDE=40500..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  1.5000      40500.     0.          4.0000     0.                51100 0.                1 0.          1111112111
...
      SEGMENT(9) ,OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =2.6.
   END ALTITUDE=52971..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  2.6000      52971.     0.          4.0000     0.                51100 0.                1 0.          1111112111
...
      SEGMENT(10), OPTION(1).
   FLY CONSTANT Q PATH
   END MACH NUMBER =2.9.
   END ALTITUDE=57560..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  2.9000      57560.     0.          5.0000     0.                51100 0.                1 0.          1111112111
...
      SEGMENT(11), OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =3.0.
   END ALTITUDE=65932..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
    END
  3.0000      65932.     0.          4.0000     0.                51100 0.                1 0.          1111112111
...
     SEGMENT(12),OPTION(6).
     CRUISE AT CONSTANT LIFT COEFFICIENT
      NUMBER OF INTEGRATION STEPS = 10.
.....  END OF CRUISE WEIGHT GUESSED = 500000. LBS
     END WEIGHT=500000..  LBS
    THRUST = THRUST REQUIRED
    PROPULSIVE MODE = DUAL
    END
 0.          0.            .50000E+06 0.        0.                51010  1.0000           6 0.          1111112111
...
      SEGMENT(13), OPTION(1).
   USE MAX L/D AS BASIS FOR SELECTION
```

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       NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                           01/11/77            10.08.38.          PAGE   13

                                                 TEST PROBLEM NO. 1
                            .....  TOTAL RANGE TO BE PERFORMED.  ITERATE TO FIND WEIGHT AT END
                            .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.

   SEARCH AT CONSTANT SPECIFIC ENERGY
   END MACH NUMBER =0.8.
   END ALTITUDE=20000..
      PROPULSIVE MODE = DUAL
      THRUST = MINIMUM ALLOWABLE
     END
  .80000      20000.      3.0000      1.0000     0.                 51210 0.                   1 0.           1111112111
...
      SEGMENT(14), OPTION(17),
   COMPUTE LOITER FUEL ALLOWANCE
   LOITER TIME=5.0. (MINUTES)
   THRUST=THRUST REQUIRED
     END
 0.          0.          0.           5.0000      1.0000            51010  2.0000            17 0.           1111112111
...
      SEGMENT(15), OPTION(1),
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.8.
   END ALTITUDE=45000..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
     END
  .80000      45000.      3.0000      4.0000     0.                 51110 0.                   1 0.           1111112111
...
      SEGMENT(16), OPTION(7),
   RANGE=200.. N.M.
      THRUST = THRUST REQUIRED
     END
 0.          0.          0.           1.0000      200.00            51010 0.                   7 0.           1111112111
...
      SEGMENT(17), OPTION(1),
   USE MAX L/D AS BASIS FOR SELECTION
   SEARCH AT CONSTANT SPECIFIC ENERGY
   END MACH NUMBER =0.8.
   END ALTITUDE=20000..
      PROPULSIVE MODE = DUAL
      THRUST = MINIMUM ALLOWABLE
     END
  .80000      20000.      3.0000      1.0000     0.                 51210 0.                   1 0.           1111112111
...
      SEGMENT(18), OPTION(17),
   COMPUTE LOITER FUEL ALLOWANCE
   LOITER TIME=5.0. (MINUTES)
   THRUST=THRUST REQUIRED
     END
 0.          0.          0.           5.0000      1.0000            51010  2.0000            17 0.           1111112111
...
      SEGMENT(19), OPTION(1),
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.6.
   END ALTITUDE=1000..
      PROPULSIVE MODE = DUAL
      WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/11/77              10.00.30.           PAGE   14

                                                          TEST PROBLEM NO. 1
                                   .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                   .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


      THRUST = MINIMUM ALLOWABLE
    END
 .40000      1330.0      5.0000      4.0000      0.                 51210 0.                  1 0.           1111112111
***
      SEGMENT(20), OPTION(17).
   360.0 DEG    1.5 G TURNS
   COMPUTE COMBAT FUEL ALLOWANCE
      THRUST = THRUST REQUIRED
     END
 0.          360.00      1.5000      3.          0.                 51010  3.0000             17 0.           1111112111
***
      SEGMENT(21), OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER  =.7.
   END ALTITUDE=50.0.
      PROPULSIVE MODE = DUAL
      THRUST = MINIMUM ALLOWABLE
     END
 .20000      50.000      5.0000      4.0000      0.                 51210 0.                  1 0.           1111112111
*****
     SEGMENT(22),OPTION(22).
     START LOOP AT BEGINNING OF SEGMENT(12)---WEIGHT IS TO BE VARIED
     FINISH LOOP AT END OF SEGMENT(21)---WEIGHT IS TO BE SATISFIED
     NUMBER OF ITERATIONS=2..     *
     DESIRED WEIGHT =42178..  LBS
     END                       *
 1.0000      1.0000      .42178E+05  12.000      21.000             51210 0.                  22  2.0000      1111112111
     SEGMENT(23),OPTION(17).
    PROPULSIVE MODE=DUAL
    THRUST = MINIMUM ALLOWABLE
    COMPUTE LANDING PERFORMANCE
    END MISSION
 0.          1.          0.          0.          1.0000             51210  4.0000             17 0.           1111112111




      WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/11/77              10.00.31.           PAGE   15

                                                          TEST PROBLEM NO. 1
                                   .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                   .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                         RUN

END OF WSEGII INPUT FOR CURRENT CASE.  0 INPUT ERRORS DETECTED.
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                                  TEST PROBLEM NO. 1
                  .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                  .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                  MISSION SEGMENT TABLE

         .20000     0.         .75000E+06  3.5000      1707.0      .50000E-01  1.0000      180.00              0
  2      2.0000     0.         3.0000      .37500E+06  65937.            51000 0.                   21         0   1111112111
  3     0.          0.        0.           5.0000      2.0000            51000  2.0000              17         0   1111112111
  4      .60000      7000.0   0.           4.0000     0.                 51100 0.                    1         0   1111112111
  5      .60000      5000.0   0.           4.0000     0.                 51100 0.                    1         0   1111112111
  6      .80000      75000.   0.           4.0000     0.                 51100 0.                    1         0   1111112111
  7      .90000      79000.   0.           4.0000     0.                 51100 0.                    1         0   1111112111
  8      1.5000      60000.   0.           4.0000     0.                 51100 0.                    1         0   1111112111
  9      2.4000      57071.   0.           4.0000     0.                 51100 0.                    1         0   1111112111
 10      2.5000      57563.   0.           4.0000     0.                 51100 0.                    1         0   1111112111
 11      1.7000      45517.   0.           4.0000     0.                 51100 0.                    1         0   1111112111
 12     0.          0.         .50000E+06 0.          0.                 51010  1.0000               6         0   1111112111
 13      .60000      20000.    2.0000      1.0000     0.                 51710 0.                    1         0   1111112111
 14     0.          0.        0.           5.0000      1.0000            51010  2.0000              17         0   1111112111
 15      .90000      45000.    3.0000      4.7300     0.                 51110 0.                    1         0   1111112111
 16     0.          0.        0.           1.0000      777.00            51010 0.                    7         0   1111112111
 17      .60000      20000.    2.0000      1.0000     0.                 51210 0.                    1         0   1111112111
 18     0.          0.        0.           5.0000      1.0000            51010  2.0000              17         0   1111112111
 19      .60000      1000.0    3.0000      4.0000     0.                 51210 0.                    1         0   1111112111
 20     0.           960.00    1.0000     0.          0.                 51010  5.0000              17         0   1111112111
 21      .20000      50.000    3.0000      4.5000     0.                 51710 0.                    1         0   1111112111
 22      1.0000      1.0000    .42170E+06  12.000      21.000            51710 0.                   22         0   1111112111
 23     0.          0.        0.          0.           1.0000            51210  6.0000              17         0   1111112111




                   TURBOJET PERFORMANCE (PER ENGINE) AT SEA LEVEL STATIC CONDITIONS

      TURBOJET GROSS THRUST - - - - - - - - - - -    57767.0      (LB)
      NET THRUST IN FREESTREAM DIRECTION  - - -      53760.0      (LB)
      AIRFLOW RATE  - - - - - - - - - - - - - -      942.701      (LB/SEC)
      FUELFLOW RATE - - - - - - - - - - - - - -      65.5616      (LB/SEC)
      SPECIFIC FUEL CONSUMPTION - - - - - - - -      1.74740      ((LB FUEL/HR)/(LB THRUST))
      BASE ENGINE SCALING FACTOR  - - - - - - -      1.51706      (ND UNITS)
      MAXIMUM AIRFLOW RATE OF BASE ENGINE - - -      620.700      (LB/SEC)
      PRESSURE RATIO OPT3/PNN - - - - - - - - -    1.000000       (ND UNITS)
      ANGLE OF ATTACK - - - - - - - - - - - - - -  0.             (DEGREES)
      WING HALF ANGLE- - - - - - - - - - - - - - - -.700000       (DEGREES)
      INLET WEDGE ANGLE- - - - - - - - - - - - - -  6.00000       (DEGREES)
      SCALING THRUST IN FREESTREAM DIRECTION - -    57760.0       (LB)
      LIFT COMPONENT OF ENGINE FORCES - - - - - -  -1165.47       (LB)
   INLET AREA FOR MAX AIRFLOW (DOR AT CRUISE=     36.577      (SQ. FT.)

      ENGINE SCALING COMPLETED

   2. ****** SELECT END     OPTION  21 ******
                   WT    =    .75000E+06     H     =  0.              AM    =    .7   0

                   TIME   =  0.              RANGE =  0.              FUEL  =  0.

 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    6.6155           CPU TIME USED IN PREVIOUS TASK =    6.6150

 MCSAVE
III          WT             H             AM       TAC***        FUEL        RUN***          VN22    T15    III OPTION
 11   .75000E+06  0.             .7000       0.           0.           0.              1.000        -0.     0.     21

UNPACK        21      51000           6          1          0          0          2.          17
 0.           0.            0.            5.0000       2.0000            51000  2.0000               17 0.           1111112111
```

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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/11/77            10.00.35.           PAGE   18

                                                                       TEST PROBLEM NO. 1
                                                  .....   TOTAL RANGE TO BE DETERMINED.   ITERATE TO FIND WEIGHT AT END OF
                                                  .....   CRUISE.   NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                     INPUT TO TAKEOFF CALCULATIONS
 WING REFERENCE AREA  (SF)                                     SREF  =    8087.603
 FLAT PLATE AREA OF GEAR (SF)                                  SPLG  =    200.0000
 FLAT PLATE DRAG COEFF OF GEAR                                 CDPLG =    .5000000
 GROUND ROLL BODY ANGLE (DEG)                                  AG    =    .2500000
 MAXIMUM GROUND ROTATION ANGLE (DEG)                           AMAXG =    20.00000
 WING INCIDENCE (DEG)                                          WINCID=   -.7000000
 THEORETICAL WING ASPECT RATIO                                 APTHEO=    2.000000
 WING LEADING EDGE SWEEP ANGLE (DEG)                           WSLEFC=    60.00000
 TOTAL LIFT LIFT CURVE SLOPE (PER DEG)                         CLATOT=    .5700000E-01
 LIFT COEF AT ZERO ANGLE OF ATTACK                             CL0   =  0.
 WING TAPER RATIO                                              TRATIO=    .2000000
 INDUCED DRAG FACTOR                                           DFX   =    .1090000
 GROUND ROLL FRICTION COEFFICIENT                              GRNDFT=    .2500000E-01
 DRAG COEFF AT ZERO LIFT                                       CD0   =    .8600750E-02
 WEIGHT AT START OF TAKE-OFF (LB)                              W0    =    749452.4
 TAKE-OFF THRUST (LB)                                          FN0   =    335932.9
 FUEL FLOW RATE  (LBS/HR)                                      FFR   =    660983.2
 SPECIFIC FUEL CONSUMPTION  (1./HR)                            SFC   =    1.967605
 SPECIFIC IMPULSE AT TAKE-OFF (SEC)                            XISO  =    1829.635
 FLAP SPAN TO EXPOSED WING SPAN RATIO                          BFOBEX=    .6600000
 FLAPDEFLECTION (DEG)                                          FLAPDT=    20.00000
 AVERAGE FLAP CHORD TO WING CHORD RATIO                        CFBCAV=    .1500000








     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/11/77            10.00.36.           PAGE   19

                                                                       TEST PROBLEM NO. 1
                                                  .....   TOTAL RANGE TO BE DETERMINED.   ITERATE TO FIND WEIGHT AT END OF
                                                  .....   CRUISE.   NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                     OUTPUT FROM TAKEOFF CALCULATIONS
 MAXIMUM WING LIFT COEFFICIENT                                 CLMAX =    1.104571
 MAXIMUM WING PLUS FLAP LIFT COEFFICIENT                       CLMAXF=    1.295284
 FLAP LIFT COEFFICIENT INCREMENT                               DELCLF=    .1907133
 GROUND ROTATION WING LIFT COEFFICIENT                         CLU   =    .8708903
 GROUND ROTATION WING PLUS FLAP LIFT COEFFICIENT               CLUF  =    1.061606
 GROUND ROLL LIFT COEFFICIENT                                  CLG   =   -.2375175E-01
 LIFT COEFFICIENT AT OBSTACLE                                  CL50  =    .9760966
 GROUND ROLL DRAG COEFFICIENT                                  CDG   =    .2063179E-01
 GROUND ROTATION DRAG COEFFICIENT                              CDU   =    .1766757
 DRAG COEFFICIENT AT OBSTACLE                                  CD50  =    .1351096
 GROUND ROTATION BODY ANGLE (DEG)                              AU    =    19.73296
 ANG. OF ATTACK FOR MAXIMUM LIFT COEFF (DEG)                   AWMAX =    23.76717
 POWER OFF STALL SPEED (KNOTS)                                 VSTAL =    130.2569
 FLIGHT SPEED CORRESPONDING TO CLUF (KNOTS)                    VU    =    152.1171
 FLIGHT SPEED AT OBSTACLE (KNOTS)                              V50   =    167.3200
 GROUND ROLL DISTANCE (FT)                                     XG    =    2605.758
 TAKE-OFF DISTANCE OVER OBSTACLE (FT)                          X50   =    3469.222
 GROUND ROLL TIME (SEC)                                        TG    =    19.36799
 TAKE-OFF TIME (SEC)                                           T50   =    23.99976
 FUEL USED FOR TAKE-OFF (LB)                                   DELW  =    241.262
 WEIGHT AT OBSTACLE (LB)                                       W50   =    749211.1
 RATE OF CLIMB AT OBSTACLE (FPS)                               ROC   =    83.85104
 FLIGHT PATH ANGLE AT OBSTACLE (DEG)                           GAM50 =    17.25067

   3. ****** SELECT END     OPTION  17 ******
                         WT     =    .74921E+06      H      =   50.000          AM     =    .25313

                         TIME   =  0.                RANGE =  0.               FUEL   =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    4.5270          CPU TIME USED IN PREVIOUS TASK =    .12000

 PGSAVE
ITZ          WT             H            AM        TAC***        FUEL       RUN***        RN1Z   E10   E11 OPTION
```

```
                              TEST PROBLEM NO. 1
                 .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                 .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                  LINEAR MACH ALTITUDE CLIMB PATH HISTORY

TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.   V (KNOTS)   CAMPR       NET THRUST      SFC

  0.000   0.             765311.   0.               50.        .253        167.        9.23   347137.6      1.9587
   .053    .14996        764713.    597.9          187.        .265        176.        9.36   347595.7      1.9456
   .107    .29697        764159.   1152.           345.        .277        183.        9.59   348549.6      1.9378
   .149    .43651        763640.   1671.           502.        .290        191.        9.73   349051.9      1.9329
   .192    .57687        763169.   2142.           668.        .302        200.        9.86   349522.6      1.9287
   .234    .71634        762640.   2671.           789.        .315        208.        9.87   349081.3      1.9267
   .276    .85678        762131.   3180.           915.        .327        216.        9.86   348875.9      1.9260
   .313    .99669        761698.   3613.          1082.        .340        224.        9.82   347669.1      1.9260
   .350   1.1341         761279.   4032.          1230.        .352        232.        9.76   346698.8      1.9266
   .387   1.2775         760877.   4434.          1377.        .364        240.        9.69   346117.1      1.9271
   .422   1.4202         760476.   4835.          1525.        .377        248.        9.61   345363.5      1.9280
   .457   1.5661         760090.   5221.          1672.        .389        256.        9.51   344589.9      1.9289
   .491   1.7094         759712.   5599.          1820.        .401        264.        9.41   343901.7      1.9298
   .525   1.8563         759461.   5850.          1967.        .414        272.        9.32   343450.6      1.9301
   .558   2.0056         758980.   6331.          2115.        .426        280.        9.22   343265.0      1.9304
   .590   2.1559         758626.   6685.          2262.        .438        287.        9.12   343005.1      1.9305
   .622   2.3089         758275.   7036.          2410.        .451        295.        9.02   342837.7      1.9306
   .653   2.4617         757931.   7380.          2557.        .463        303.        8.91   342792.2      1.9308
   .684   2.6176         757692.   7619.          2705.        .475        311.        8.81   342613.6      1.9297
   .716   2.7760         757257.   8054.          2852.        .488        319.        8.70   342577.5      1.9297
   .746   2.9363         756328.   8983.          3000.        .500        327.        8.60   342603.6      1.9287
 6. ****** SELECT END    OPTION   1 ******
                         WT    =   .75633E+06     H    =   3000.0        AM    =   .50000

                         TIME  =   .83333E-01     RANGE =  0.            FUEL  =   8982.9
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   5.6319          CP. TIME USED IN PREVIOUS TASK =   1.1068

 PGSAVE
ITZ          WT              H            AM        TAC***        FUEL        RUN***           XNZZ   F10    F11 OPTION
 31   .7369E+06    3000.         .5000        .1260E-01    8282.         2.936          1.000        -0.     0.     1


UNPACK         61      51157          5          1          1          0          0.          1
  .60000       5100.0      0.              6.0000      0.                  51150 0.                    1 0.            1111112111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/11/77            18.00.39.           PAGE   21

                                         TEST PROBLEM NO. 1
                            .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                            .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME         RANGE        WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMZD        NET THRUST        SFC

    0.000    0.              736928.   0.                3000.          .500          327.         11.51   342623.7        1.9286

     .015    .80803E-01      736762.    165.7            3100.          .505          330.         11.48   342316.8        1.9282

     .030    .16290          736597.    330.6            3200.          .510          333.         11.42   342008.6        1.9279

     .045    .24353          736434.    494.2            3300.          .515          337.         11.37   341697.6        1.9276

     .060    .32554          736271.    657.0            3400.          .520          340.         11.32   341407.5        1.9272

     .075    .40796          736109.    818.8            3500.          .525          343.         11.26   341130.2        1.9268

     .089    .49074          735948.    979.8            3600.          .530          346.         11.21   340865.6        1.9264

     .104    .57331          735788.   1140.             3700.          .535          349.         11.16   340613.7        1.9259

     .118    .65760          735629.   1299.             3800.          .540          352.         11.11   340374.5        1.9254

     .133    .74146          735470.   1458.             3900.          .545          355.         11.06   340171.7        1.9249

     .147    .82547          735313.   1615.             4000.          .550          359.         11.00   339868.0        1.9244

     .162    .91059          735156.   1772.             4100.          .555          362.         10.95   339662.7        1.9238

     .176    .99577          735000.   1928.             4200.          .560          365.         10.90   339470.1        1.9232

     .190   1.0814           734845.   2083.             4300.          .565          368.         10.85   339230.2        1.9226

     .205   1.1673           734690.   2238.             4400.          .570          371.         10.80   339043.0        1.9219

     .219   1.2537           734536.   2391.             4500.          .575          374.         10.76   338866.3        1.9212

     .233   1.3405           734383.   2544.             4600.          .580          377.         10.71   338706.1        1.9204

     .247   1.4277           734231.   2696.             4700.          .585          380.         10.66   338556.3        1.9196

     .261   1.5152           734080.   2848.             4800.          .590          384.         10.61   338418.9        1.9188

     .275   1.6032           733929.   2999.             4900.          .595          387.         10.57   338293.8        1.9179

     .289   1.6916           733779.   3149.             5000.          .600          390.         10.54   338188.9        1.9170
 5, ****** SELECT END    OPTION   1 ******
                     WT    =   .73378E+06      H     =   5000.0          AM     =   .60000

                     TIME  =   .36731E-01      RANGE =   2.9363          FUEL   =   8283.4
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


 CUMULATIVE CPU TIME =    6.6278          CPU TIME USED IN PREVIOUS TASK =    .99680

 RCSAVE
IT2           WT              H              AM        TAC***          FUEL        RUN***          XNZZ    E10    E11 OPTION
 41   .73380E+06   5000.         .6000          .4813E-02   3149.         1.692         1.000        -0.     0.      1

UNPACK         51      51100          5            1          1          0          0.          1
 .80000        21500.     0.              4.0000      0.                 51100 0.                    1 0.           1111112111
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                                        TEST PROBLEM NO. 1
                          .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                          .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                    LINEAR MACH ALTITUDE CLIMB PATH HISTORY

   TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.   V (KNOTS)   GAMMA     NET THRUST       SFC

    0.000   0.               733779.   0.               5000.       .603        390.       17.96   338171.4       1.9173
     .067    .41971          733057.    721.6           5825.       .613        395.       17.76   332626.2       1.9154
     .135    .84837          732343.   1436.            6650.       .623        400.       17.36   326915.6       1.9135
     .204   1.2877           731636.   2143.            7475.       .633        406.       16.98   321306.0       1.9118
     .273   1.7376           730935.   2843.            8300.       .643        411.       16.61   315867.4       1.9097
     .342   2.1976           730241.   3537.            9125.       .653        416.       16.25   310538.7       1.9076
     .413   2.6673           729556.   4224.            9950.       .663        421.       15.91   305685.3       1.9060
     .483   3.1498           728873.   4905.           10775.       .673        426.       15.57   300619.7       1.9031
     .555   3.6473           728198.   5581.           11600.       .683        431.       15.24   295370.3       1.9014
     .627   4.1461           727529.   6250.           12425.       .693        436.       14.90   290353.2       1.8995
     .700   4.6622           726864.   6915.           13250.       .703        441.       14.56   284999.6       1.8979
     .774   5.1913           726204.   7576.           14075.       .713        446.       14.21   279712.9       1.8962
     .849   5.7333           725549.   8229.           14900.       .723        451.       13.89   274560.0       1.8943
     .925   6.2901           724899.   8880.           15725.       .733        456.       13.55   269675.0       1.8921
    1.001   6.8606           724253.   9526.           16550.       .743        461.       13.22   264486.6       1.8901
    1.079   7.4458           723611.   .1017E+05       17375.       .753        465.       12.88   259162.4       1.8880
    1.159   8.0473           722973.   .1081E+05       18200.       .763        470.       12.54   253907.1       1.8796
    1.239   8.6658           722342.   .1144E+05       19025.       .773        475.       12.21   248744.6       1.8698
    1.321   9.3016           721716.   .1206E+05       19850.       .783        479.       11.89   243726.2       1.8600
    1.404   9.9548           721095.   .1268E+05       20675.       .793        484.       11.58   238575.4       1.8501
    1.488  10.627            720480.   .1330E+05       21500.       .803        488.       11.47   233597.4       1.8403
 6. ****** SELECT END    OPTION   1 ******
                        WT    =   .72048E+06     H     =   21500.        AM    =   .80000

                        TIME  =   .10056         RANGE =   4.6258        FUEL  =   3149.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    7.7153          CPU TIME USED IN PREVIOUS TASK =   1.0850

 MGSAVE
ITZ          WT             H           AM        TAC***        FUEL       RUN***         XNZZ    F10    F11 OPTION
 51    .7205E+06    .2150E+05    .8000        .2481E-01    .1330E+05   10.63        1.000        -0.    0.      1

UNPACK         61      51100          5          1          1          0          0.          1
  .95000        29993.      0.              4.0000       0.                51100 0.                        1 0.            1111112111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/11/77            10.08.41.          PAGE   23

                                            TEST PROBLEM NO. 1
                             .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                             .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY
  TIME         RANGE          WEIGHT       FUEL          ALTITUDE    MACH NO.     V (KNOTS)   GAMZD         NET THRUST      SFC

    0.000   0.               720480.    0.              21500.         .800          488.          9.56   233882.0        1.8404

     .046    .36639          720155.     325.3          21875.         .807          492.          9.49   232406.1        1.8362

     .091    .73884          719831.     649.7          22250.         .815          496.          9.35   230972.9        1.8324

     .137   1.1162           719507.     973.2          22625.         .822          500.          9.22   229541.5        1.8292

     .184   1.4992           719184.    1296.           23000.         .829          503.          9.08   227652.0        1.8260

     .231   1.8878           718862.    1618.           23375.         .837          507.          8.95   226104.2        1.8228

     .278   2.2871           718540.    1940.           23750.         .845          511.          8.82   224515.9        1.8196

     .325   2.6826           718219.    2261.           24125.         .852          515.          8.69   222933.2        1.8164

     .373   3.0888           717899.    2582.           24500.         .860          518.          8.57   221390.9        1.8131

     .421   3.5012           717578.    2903.           24875.         .867          522.          8.44   219894.0        1.8097

     .469   3.9199           717258.    3223.           25250.         .875          526.          8.32   218390.3        1.8063

     .518   4.3449           716938.    3542.           25625.         .882          529.          8.20   216921.4        1.8029

     .567   4.7761           716619.    3862.           26000.         .890          533.          8.08   215491.1        1.7994

     .617   5.2139           716300.    4181.           26375.         .897          537.          7.96   214075.9        1.7958

     .667   5.6586           715981.    4500.           26750.         .905          540.          7.83   212585.2        1.7924

     .717   6.1114           715661.    4819.           27125.         .912          544.          7.69   211121.6        1.7890

     .769   6.5725           715341.    5140.           27500.         .920          548.          7.55   209696.3        1.7855

     .820   7.0420           715019.    5461.           27875.         .927          551.          7.42   208275.5        1.7820

     .873   7.5203           714697.    5783.           28250.         .935          555.          7.28   206851.7        1.7785

     .926   8.0076           714374.    6107.           28625.         .942          558.          7.15   205465.1        1.7749

     .979   8.5039           714050.    6431.           29000.         .950          562.          7.08   204115.4        1.7712
  7. ****** XSLECT END     OPTION    1 ******
                      WT      =    .71405E+06      H       =    29000.          AM      =    .95000

                      TIME    =    .12535          RANGE =     15.252           FUEL    =    13290.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    8.7230           CPU TIME USED IN PREVIOUS TASK =    1.0080

  RGSAVE
 ITZ            WT             H             AM       TAC***          FUEL       RUN***         XNZZ   E10   E11 OPTION
  61   .7140E+06   .2900E+05    .9500        .1632E-01    6431.        8.504        1.000       -0.    0.     1


 UNPACK        71      51100           5          1         1          0          0.          1
   1.5000      40500.      0.            4.0000      0.                  51100 0.                        1 0.          1111112111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/11/77          10.00.43.          PAGE   26

                                              TEST PROBLEM NO. 1
                              .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                              .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

TIME        RANGE        WEIGHT      FUEL          ALTITUDE      MACH NO.    V (KNOTS)   GAMMA       NET THRUST       SFC

   0.000   0.                714050.   0.                29000.        .950         562.        4.98   204112.1        1.7712
    .130    1.2333           713262.   787.9             29575.        .977         577.        4.23   205591.9        1.7697
    .266    2.5297           712450.   1600.             30150.       1.005         592.        4.09   205736.2        1.7888
    .400    3.8805           711617.   2432.             30725.       1.032         606.        3.93   200203.5        1.8451
    .537    5.2827           710768.   3282.             31300.       1.060         621.        3.88   199009.0        1.9121
    .676    6.7312           709903.   4147.             31875.       1.087         635.        3.67   198696.5        1.9003
    .816    8.2312           709021.   5029.             32450.       1.115         650.        3.70   198648.5        1.9506
    .947    9.6575           708193.   5856.             33025.       1.142         664.        3.80   196749.5        1.9405
   1.074   11.075            707382.   6668.             33600.       1.170         678.        3.77   195546.6        1.9673
   1.201   12.531            706561.   7489.             34175.       1.197         692.        3.66   193674.9        1.9919
   1.330   14.029            705733.   8317.             34750.       1.225         706.        3.57   191836.7        2.0165
   1.460   15.567            704898.   9152.             35325.       1.252         720.        3.45   190174.9        2.0353
   1.590   17.141            704057.   9992.             35900.       1.280         734.        3.29   188727.7        2.0561
   1.730   19.067            703156.   .1089E+05         36475.       1.307         749.        3.03   185675.2        2.0770
   1.877   20.721            702215.   .1183E+05         37050.       1.335         765.        2.97   181369.5        2.1052
   2.016   22.509            701335.   .1271E+05         37625.       1.362         781.        3.05   191748.5        1.9699
   2.150   24.270            700496.   .1355E+05         38200.       1.390         797.        3.05   191505.0        1.9508
   2.284   26.063            699666.   .1439E+05         38775.       1.417         813.        2.94   190555.1        1.9307
   2.419   27.900            698840.   .1521E+05         39350.       1.445         828.        2.89   188964.2        1.9301
   2.556   29.811            698014.   .1604E+05         39925.       1.472         844.        2.80   187176.1        1.9234
   2.694   31.779            697187.   .1686E+05         40500.       1.500         860.        2.75   185185.3        1.9190
0. ****** XCLECT END    OPTION   1 ******
                         WT    =   .69719E+06      H     =   40500.        AM    =   1.5000

                         TIME  =   .14167         RANGE =   23.756        FUEL  =   6630.8

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


 CUMULATIVE CPU TIME =    10.175          CPU TIME USED IN PREVIOUS TASK =   1.4520

 RGSAVE
ITZ         WT            H          AM         TAC***         FUEL        RUN***         XNZZ   E10   E11 OPTION
 71   .6972E+06   .4050E+05   1.500        .4491E-01   .1686E+05   31.78        1.000        -0.    0.     1

UNPACK        81      51100          5          1         1          9         0.         1
  2.6000      52971.      0.              4.0000      0.                 51100 0.                        1 0.          1111112111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/11/77            10.08.45.          PAGE   25

                                          TEST PROBLEM NO. 1
                               .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                               .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                                LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME          RANGE          WEIGHT       FUEL          ALTITUDE     MACH NO.    V (KNOTS)   GAM70        NET THRUST          SFC

   0.000   0.                 697187.   0.                40500.        1.500        860.          1.69   185140.0          1.9105

    .239    3.6077            695775.    1412.            41124.        1.555        891.          1.65   186736.1          1.9129

    .480    7.1247            694360.    2827.            41747.        1.610        923.          1.59   186377.0          1.9072

    .720   10.876             692951.    4236.            42371.        1.665        954.          1.60   190276.9          1.8891

    .963   14.492             691680.    5507.            42994.        1.720        986.          1.62   194329.5          1.8763

   1.168   18.113             690269.    6918.            43618.        1.775       1017.          1.61   197636.0          1.8687

   1.373   21.770             688956.    8231.            44241.        1.830       1049.          1.60   199962.3          1.8663

   1.581   25.442             687657.    9530.            44865.        1.885       1080.          1.59   202144.2          1.8687

   1.785   29.107             686372.   .1082E+05         45488.        1.940       1112.          1.57   204403.9          1.8687

   1.985   32.937             685099.   .1209E+05         46112.        1.995       1144.          1.56   206669.1          1.8618

   2.181   36.721             683837.   .1335E+05         46735.        2.050       1175.          1.54   208550.2          1.8622

   2.374   40.555             682581.   .1461E+05         47359.        2.105       1207.          1.52   209667.4          1.8673

   2.564   44.432             681331.   .1586E+05         47983.        2.160       1238.          1.51   211935.6          1.8719

   2.750   48.316             680093.   .1709E+05         48606.        2.215       1270.          1.51   214557.2          1.8750

   2.932   52.206             678867.   .1832E+05         49230.        2.270       1301.          1.51   216049.4          1.8791

   3.110   56.110             677651.   .1954E+05         49853.        2.325       1333.          1.51   219005.0          1.8863

   3.283   60.011             676445.   .2074E+05         50477.        2.380       1364.          1.51   221737.6          1.8931

   3.453   63.909             675250.   .2194E+05         51100.        2.435       1396.          1.51   224012.5          1.9012

   3.619   67.810             674065.   .2312E+05         51724.        2.490       1427.          1.50   226105.6          1.9082

   3.782   71.724             672887.   .2430E+05         52347.        2.545       1459.          1.50   227036.6          1.9156

   3.942   75.660             671715.   .2547E+05         52971.        2.600       1490.          1.49   229930.1          1.9229
 9. ****** SELECT END     OPTION    1 ******
                     WT     =    .67171E+06      H      =    52971.          AM     =    2.6000

                     TIME   =    .18658          RANGE  =    55.535          FUEL   =    16063.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    12.051          CPU TIME USED IN PREVIOUS TASK =    1.0760

 RGSAVE
ITZ          WT           H            AM       TAC***        FUEL       RUN***        XNZ7   E10   E11 OPTION
 01   .6717E+06    .5297E+05    2.600        .6570E-01   .2547E+05   75.66        1.000       -0.    0.     1

UNPACK         91      51100          5          1          1          0         0.          1
  2.9000       57540.      0.            5.0000      0.                  51100 0.                       1 0.          1111112111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                         11/11/77            15.08.47.         PAGE   26

                                          TEST PROBLEM NO. 1
                             .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                             .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                   CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

TIME        RANGE         WEIGHT       FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMMA        NET THRUST        TFC

   0.000   0.              671715.   0.              52971.        2.600        1490.        2.19  229973.9        1.9225

    .040    .98377         671423.    291.2          53190.        2.613        1498.        2.08  229578.9        1.9244

    .083   2.0763          671102.    612.9          53420.        2.627        1506.        1.96  229300.5        1.9281

    .127   3.1793          670779.    936.1          53656.        2.642        1514.        1.96  229166.9        1.9296

    .171   4.2921          670454.   1260.           53885.        2.656        1522.        1.92  228941.5        1.9310

    .215   5.4156          670129.   1586.           54113.        2.671        1531.        1.91  228849.2        1.9330

    .260   6.5495          669802.   1913.           54342.        2.685        1539.        1.89  228640.9        1.9363

    .304   7.6963          669473.   2241.           54570.        2.700        1548.        1.87  228413.5        1.9381

    .349   8.8507          669143.   2572.           54799.        2.715        1556.        1.85  228106.9        1.9415

    .394   10.015          668812.   2903.           55027.        2.730        1565.        1.83  228012.0        1.9419

    .439   11.187          668479.   3236.           55255.        2.745        1573.        1.82  227717.3        1.9446

    .484   12.388          668144.   3570.           55484.        2.760        1582.        1.80  227372.8        1.9476

    .530   13.591          667808.   3906.           55712.        2.775        1591.        1.78  227059.5        1.9506

    .575   14.808          667472.   4244.           55941.        2.791        1600.        1.76  226702.7        1.9536

    .622   16.038          667131.   4584.           56169.        2.806        1608.        1.74  226353.0        1.9567

    .668   17.             666789.   4925.           56398.        2.821        1617.        1.72  226007.2        1.9598

    .714   18.535          666446.   5269.           56626.        2.837        1626.        1.71  225617.5        1.9630

    .761   19.803          666101.   5614.           56855.        2.853        1635.        1.69  225558.0        1.9662

    .808   21.086          665755.   5960.           57083.        2.869        1644.        1.67  225297.0        1.9695

    .855   22.378          665406.   6309.           57312.        2.886        1653.        1.65  224992.1        1.9730

    .902   23.685          665056.   6659.           57540.        2.900        1662.        1.63  224662.7        1.9766
 10. ****** SELECT END     OPTION   1 ******
                     WT    =   .66506E+06      H     =   57560.         AM    =   2.9000

                     TIME  =   .25227         RANGE =   131.70         FUEL  =   25472.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    13.585          CPU TIME USED IN PREVIOUS TASK =   1.4560

 RGSAVE
ITZ          WT             H           AM        TAC***        FUEL       PUN***        XNZZ    C10    C11 OPTION
 91   .6651E+06   .5756E+05   2.900         .1504E-01   6659.        23.69         1.000        -0.     0.      1


UNPACK       16.      51100          5          1          1          0          0.         1
  1.0000      65932.      0.            4.0000      0.                  51100 0.                    1 0.           1111112111
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                                   TEST PROBLEM NO. 1
                    .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                    .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME        RANGE        WEIGHT      FUEL        ALTITUDE    MACH NO.    V (KNOTS)   GAMFD        NET THRUST     SFC

   0.000   0.              665056.   0.             57540.       2.900        1662.        5.57   224661.0      1.9766

    .026    .70815         664867.    188.6         57960.       2.905        1665.        5.50   220817.5      1.9780

    .052   1.4369          664679.    378.1         58379.       2.910        1668.        5.36   216995.1      1.9801

    .079   2.1996          664487.    569.2         58799.       2.915        1671.        5.22   213355.1      1.9799

    .106   2.9658          664294.    761.7         59218.       2.920        1674.        5.08   209662.1      1.9819

    .135   3.7322          664100.    955.9         59638.       2.925        1677.        4.95   205978.6      1.9839

    .164   4.5406          663904.   1152.          60058.       2.930        1679.        4.81   202349.6      1.9859

    .193   5.3719          663706.   1350.          60477.       2.935        1682.        4.68   198863.9      1.9880

    .224   6.2269          663505.   1549.          60897.       2.940        1685.        4.55   195396.0      1.9901

    .255   7.1078          663305.   1751.          61316.       2.945        1688.        4.42   191952.0      1.9922

    .288   8.0175          663100.   1955.          61736.       2.950        1691.        4.29   188567.5      1.9944

    .321   8.9677          662894.   2162.          62156.       2.955        1694.        4.16   185270.1      1.9965

    .355   9.9107          662685.   2371.          62575.       2.960        1697.        4.04   182016.1      1.9988

    .390  10.904           662473.   2582.          62995.       2.965        1700.        3.91   178805.2      2.0010

    .427  11.930           662259.   2797.          63414.       2.970        1702.        3.79   175636.9      2.0033

    .464  12.990           662041.   3014.          63834.       2.975        1705.        3.66   172532.4      2.0056

    .503  14.086           661821.   3235.          64254.       2.980        1708.        3.54   169480.1      2.0080

    .542  15.219           661597.   3459.          64673.       2.985        1711.        3.42   166483.0      2.0103

    .584  16.393           661369.   3687.          65093.       2.990        1714.        3.30   163519.1      2.0128

    .626  17.615           661137.   3919.          65512.       2.995        1717.        3.09   160595.6      2.0153

    .673  18.959           660884.   4171.          65932.       3.000        1720.        2.93   157680.6      2.0179
 11. ****** SELECT END    OPTION   1 ******
                      WT    =   .66088E+06     H     =   65932.        AM    =   3.0000

                      TIME  =   .26731         RANGE =   154.40        FUEL  =   6659.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   15.303          CPU TIME USED IN PREVIOUS TASK =   1.0780

 RGSAVE
ITZ          WT            H              AM        TAC***         FUEL       RUN***        XNZZ   E10   E11 OPTION
101   .6609E+06   .6593E+05   3.000          .1122E-01   4171.       18.96        1.000        -0.    0.     1


UNPACK        111      51010          5         1         0        10       10.         6
 0.           0.             .50000E+06 0.           0.                51010  1.0000               6 0.          1111112111
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      NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/11/77          10.08.56.        PAGE   28

                                       TEST PROBLEM NO. 1
                              .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                              .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.

 SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

  THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                         CLIMB PATH HISTORY

   TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAMMA      NET THRUST      SFC

     0.000    0.            500000.    0.            65932.       2.689      1696.       6.79  -13891.37      -.10311

      .271    6.5773        499990.     9.573        69276.       2.669      1610.       -.95  -11010.71      -.15016

      .486    11.617        499984.     16.33        66136.       2.620      1388.      -5.51  -13129.87      -.16985

      .704    16.598        499976.     23.96        63397.       2.367      1357.       1.73  -13521.63      -.16036

     1.048    23.952        499966.     34.06        70676.       2.150      1236.       2.01  -11651.56      -.11443

     1.367    33.471        499958.     41.51        67869.       2.102      1206.      -4.93  -13254.56      -.11232

     1.699    37.815        499950.     50.41        63627.       2.053      1175.      -4.91  -13762.23      -.12371

     2.038    43.551        499939.     60.71        60196.       1.996      1143.        .13  -14303.00      -.13360

     2.447    51.945        499928.     72.05        64283.       1.798      1030.       -.52  -12990.39      -.10709

     2.793    56.792        499919.     80.53        60482.       1.763       999.      -6.23  -15199.71      -.10295

     3.158    62.637        499909.     90.61        56522.       1.686       966.      -1.99  -16173.00      -.10962

     3.646    70.181        499896.     104.3        58139.       1.582       861.      -1.01  -16676.21      -.96535E-01

     4.135    77.041        499882.     117.8        56837.       1.465       820.      -2.02  -21260.67      -.96279E-01

     4.665    83.652        499868.     132.4        5420 .       1.271       729.      -3.25  -21713.61      -.73064E-01

     5.195    91.176        499852.     148.3        49521.       1.215       696.      -6.47  -16954.70      -.10944

     5.823    97.275        499831.     169.4        44836.       1.156       663.      -2.56  -9441.320      -.22674

     6.792    106.72        499802.     198.3        45904.        .895       513.      -1.02   900.1037       1.6761

     8.087    117.45        499767.     232.9        40566.        .861       482.      -4.49   1004.707       1.6119

     9.616    129.29        499718.     282.3        35187.        .780       449.      -4.67   1315.969       1.6050

    11.365    142.40        499643.     357.2        28052.        .776       459.      -4.29   1762.789       1.7231

    13.232    156.08        499540.     460.0        23013.        .686       416.      -7.46   1900.383       1.7863

    15.796    175.75        496480.     3520.        20000.        .800       491.      -1.46   60121.05       1.6520
 13. ****** XCLECT END     OPTION   1 ******
                     WT     =   .49648E+06     H     =   20000.        AM     =   .80000

                     TIME   =   1.5255        RANGE =   2176.4        FUEL   =   .16000E+06

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***




 CUMULATIVE CPU TIME =    21.489          CPU TIME USED IN PREVIOUS TASK =    5.7560

 PGSAVE
ITZ          WT           H            AM       TAC***       FUEL       RUN***        XNZZ   I10   I11 OPTION
121   .4965E+06   .2000E+05   .8000        .2632        3520.       175.8        1.000       -5.    0.     1


UNPACK        131     51010          5          1          0         10        10.        17
 0.           0.           0.             5.0000      1.0000            51010  2.0000             17 0.          1111112111
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                                   TEST PROBLEM NO. 1
                     .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                     .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME      RANGE       WEIGHT      FUEL       ALTITUDE     MACH NO.   V (KNOTS)   SW/FD     NET THRUST     SFC

   0.000  0.            489956.   0.            20000.        .800       491.       26.20   247196.9      1.8605

    .057   .41786       489530.   425.4         21250.        .800       489.       25.50   236755.2      1.8425

    .117   .86249       489105.   850.9         22500.        .800       486.       24.13   225626.3      1.8246

    .181  1.3367        488679.   1277.         23750.        .800       484.       22.79   214995.3      1.8068

    .249  1.8421        488252.   1704.         25000.        .800       481.       21.50   204836.1      1.7892

    .321  2.3815        487827.   2132.         26250.        .800       479.       20.25   195172.3      1.7713

    .398  2.9576        487394.   2561.         27500.        .800       476.       19.05   185733.5      1.7506

    .480  3.5736        486963.   2992.         28750.        .800       474.       17.89   176796.7      1.7293

    .568  4.2330        486530.   3426.         30000.        .800       471.       16.76   168152.0      1.7084

    .662  4.9405        486093.   3862.         31250.        .800       469.       15.66   159820.1      1.6876

    .763  5.7016        485653.   4303.         32500.        .800       466.       14.59   151831.9      1.6660

    .872  6.5219        485207.   4749.         33750.        .800       463.       13.55   144161.3      1.6461

    .991  7.4096        484754.   5202.         35000.        .800       461.       12.60   136786.9      1.6255

   1.123  8.3979        484281.   5676.         36250.        .800       459.       10.89   129607.0      1.6067

   1.277  9.5616        483760.   6195.         37500.        .800       459.        9.56   122037.0      1.6072

   1.448 10.951         483218.   6737.         38750.        .800       459.        8.60   114906.4      1.6078

   1.638 12.289         482650.   7305.         40000.        .800       459.        7.69   108188.2      1.6084

   1.852 13.987         482050.   7906.         41250.        .800       459.        6.81   101956.1      1.6091

   2.096 15.767         481409.   8548.         42500.        .800       459.        5.96   95893.62      1.6099

   2.373 17.967         480712.   9244.         43750.        .800       459.        5.13   90272.01      1.6108

   2.699 21.357         479963.   .1001E+05     45000.        .800       459.        4.72   84976.80      1.6119
 15. ****** XCLECT END     OPTION   1 ******
                WT     =   .47996E+06     H      =   45000.        AM     =   .80000

                TIME   =   1.4721         RANGE =   2350.1         FUEL   =   6524.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   22.491          CPU TIME USED IN PREVIOUS TASK =   1.0660

 RGSAVE
IT7          WT              H               AM        TAC***        FUEL       RUN***         XN77   F10   F11 OPTION
141   .4799E+06   .4505E+05   .8000          .4499E-01   .1001E+05   20.36       1.000        -0.    0.     1


UNPACK        151     51010          5          1          0         10        10.          7
 0.           0.           0.           1.0000       200.00           51010 0.                       7 0.          1111112111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                      01/11/77            15.01.03.          PAGE   18

                                         TEST PROBLEM NO. 1
                              .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                              .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                CLIMB PATH HISTORY

  TIME         RANGE          WEIGHT       FUEL          ALTITUDE      MACH NO.    V (KNOTS)   GAMMA          NET THRUST         SFC

    0.000   0.               656779.   0.               45000.          .880          650.       -15.11   950.9680          1.6077

     .259    1.5979          656774.    5.087           42373.          .863          693.        -9.46   981.5631          1.6129

     .478    3.7379          656767.   12.46            41631.          .853          687.        -6.17   1066.762          1.6127

     .729    5.8999          656759.   20.70            40648.          .841          687.        -4.06   1107.567          1.6096

    1.015    8.1076          656751.   28.61            39566.          .831          676.        -1.93   1167.676          1.6062

    1.300   10.341           656742.   37.45            38606.          .821          670.        -1.87   1183.686          1.6029

    1.592   12.615           656733.   46.86            37662.          .811          665.        -1.87   1226.131          1.5997

    1.896   14.928           656723.   56.87            36719.          .801          659.        -1.80   1259.196          1.5976

    2.226   17.280           656712.   67.56            35777.          .789          653.        -1.77   1309.765          1.6013

    2.518   19.630           656701.   78.71            34835.          .775          647.        -1.77   1345.125          1.6136

    2.830   21.989           656689.   90.67            33893.          .761          641.        -1.75   1380.382          1.6262

    3.163   24.357           656677.  102.9             32950.          .749          635.        -1.74   1414.981          1.6384

    3.496   26.776           656664.  115.9             32038.          .736          628.        -1.72   1456.606          1.6506

    3.831   29.119           656650.  129.6             31066.          .721          622.        -1.71   1497.375          1.6626

    4.175   31.512           656635.  144.1             30124.          .705          616.        -1.70   1531.616          1.6744

    4.525   33.913           656620.  159.3             29182.          .692          609.        -1.69   1571.529          1.6861

    4.887   36.321           656604.  175.3             28239.          .678          602.        -1.68   1611.457          1.6977

    5.246   38.736           656587.  192.2             27297.          .664          596.        -1.67   1651.446          1.7092

    5.617   41.158           656570.  209.9             26355.          .651          589.        -1.66   1695.386          1.7216

    5.996   43.586           656551.  228.7             25413.          .636          582.        -1.65   1739.226          1.7339

    6.383   46.021           656531.  248.5             24470.          .621          575.        -2.08   1784.413          1.7460

    9.161   65.876           651238.  3141.             20000.          .800          691.        -7.12   44461.12          1.8422
 17. ****** SELECT END     OPTION   1 ******
                      WT     =   .65126E+06     H     =   20000.        M*    =   .80000

                      TIME   =   2.3532        RANGE =   2570.5        FUEL  =   25566.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    77.197          CPU TIME USED IN PREVIOUS TASK =   4.2060

 RGSAVE
IYZ          WT             H              AM       TAC***          FUEL        RUN***        XNZ?   T10    T11 OPTION
161    .6512E+06    .2000E+05    .8000        .1510          3141.         65.87         1.000         -0.     0.      1

UNPACK        171      51010          5           1          0          10          10.         17
 0.           0.           0.              5.0000       1.0000            51010  2.0000                  17 0.           1111112111
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                                        TEST PROBLEM NO. 1
                        .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                        .....  CRUISE.   NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME       RANGE       WEIGHT     FUEL        ALTITUDE    MACH NO.    V (KNOTS)   GAMPD       NET THRUST      SFC

   0.000    0.           445340.    0.          20000.       .800        491.        -4.56     2475.236        1.0597
    .241     1.9576      445321.     19.68      19050.       .790        487.        -4.59     2537.889        1.0617
    .483     3.9049      445302.     37.99      18100.       .780        482.        -4.60     2601.151        1.0649
    .724     5.8478      445282.     57.95      17150.       .770        478.        -4.62     2661.657        1.0693
    .970     7.7715      445262.     78.37      16200.       .760        474.        -4.64     2722.129        1.0717
   1.213     9.6913      445240.     99.64      15250.       .750        469.        -4.66     2783.769        1.0739
   1.461    11.633       445219.    121.1       14300.       .740        465.        -4.68     2845.977        1.0761
   1.709    13.556       445196.    143.6       13350.       .730        460.        -4.70     2906.636        1.0783
   1.959    15.407       445174.    166.4       12400.       .720        455.        -4.72     2965.979        1.0805
   2.210    17.291       445150.    190.3       11450.       .710        450.        -4.74     3025.236        1.0829
   2.461    19.176       445126.    214.2       10500.       .700        446.        -4.75     3086.292        1.0848
   2.714    21.051       445101.    239.2        9550.       .690        441.        -4.76     3147.437        1.0866
   2.975    22.921       445075.    264.9        8600.       .680        436.        -4.78     3210.579        1.0885
   3.236    24.798       445049.    291.4        7650.       .670        431.        -4.79     3274.035        1.0902
   3.496    26.656       445021.    318.7        6700.       .660        426.        -4.80     3339.737        1.0914
   3.761    28.515       444993.    346.8        5750.       .650        421.        -4.80     3407.415        1.0942
   4.029    30.376       444964.    375.9        4800.       .640        416.        -4.81     3470.488        1.0962
   4.299    32.232       444934.    405.9        3850.       .630        411.        -4.81     3539.349        1.0980
   4.573    34.093       444903.    436.8        2900.       .620        406.        -4.81     3608.435        1.0999
   4.850    35.948       444871.    468.9        1950.       .610        401.        -4.81     3678.557        1.1017
   5.131    37.807       444838.    502.0        1000.       .600        395.        -4.80     3751.878        1.1028
19. ****** SELECT END    OPTION   1 ******
                      WT    =   .44484E+06     H     =   1000.0        AM    =   .60000

                      TIME  =   2.5876        RANGE =   2636.4        FUEL  =   5098.5
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   29.089          CPU TIME USED IN PREVIOUS TASK =   .94200

 RGSAVE
ITZ          WT            H             AM        TAC***          FUEL       RUN***          XNZZ   E10    E11 OPTION
181   .4448E+06   1000.         .6000          .8557E-01   502.0         37.81         1.000          -0.     0.      1

UNPACK        191      5.?10          5          1          0          10         10.          17
 0.                150.03       1.4000      0.              0.                    51010  3.0000                 17 0.            1111112111
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  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                         01/11/77          19.01.36.          PAGE   32

                                                       TEST PROBLEM NO. 1
                                       .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                       .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                                 LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME          RANGE         WEIGHT       FUEL          ALTITUDE     MACH NO.    V (KNOTS)    GAMMA         NET THRUST       SFC

    0.000    0.                442037.    0.             1000.        .600        395.        -.54    3751.005         1.9020

     .129     .83686           442021.     15.79          952.        .580        382.        -.53    3724.571         1.9063

     .266    1.6807            442006.     31.24          905.        .560        369.        -.53    3700.411         1.9086

     .406    2.5356            441989.     47.86          857.        .540        356.        -.52    3677.515         1.9105

     .553    3.3967            441972.     65.13          810.        .520        343.        -.52    3656.876         1.9119

     .708    4.2607            441956.     81.06          762.        .500        330.        -.52    3638.091         1.9127

     .868    5.1231            441935.    101.6           715.        .480        317.        -.52    3620.744         1.9131

    1.036    5.9789            441916.    120.7           667.        .460        303.        -.53    3606.421         1.9128

    1.206    6.8219            441897.    140.2           620.        .440        290.        -.54    3593.577         1.9120

    1.378    7.6496            441877.    160.1           572.        .420        277.        -.55    3582.193         1.9107

    1.555    8.4417            441857.    180.3           525.        .400        264.        -.58    3573.600         1.9088

    1.732    9.2026            441836.    200.6           477.        .380        251.        -.61    3577.206         1.9053

    1.909    9.9252            441816.    220.6           430.        .360        238.        -.65    3572.130         1.9015

    2.082   10.587             441797.    240.0           382.        .340        224.        -.70    3573.520         1.8975

    2.249   11.195             441778.    258.9           335.        .320        211.        -.78    3576.373         1.8932

    2.409   11.740             441760.    276.9           288.        .300        198.        -.88    3579.005         1.8891

    2.559   12.219             441743.    293.7           240.        .280        185.       -1.01    3579.410         1.8879

    2.697   12.629             441728.    309.2           192.        .260        172.       -1.20    3560.296         1.8874

    2.822   12.973             441714.    323.1           145.        .240        159.       -1.45    3551.456         1.8720

    2.933   13.256             441701.    335.6            97.        .220        145.       -1.88    3536.020         1.8790

    3.029   13.470             441691.    346.1            50.        .200        132.       -2.80    3500.990         1.8970
 21. ****** SELECT END    OPTION   1 ******
                    WT    =   .441690E+06     H     =   50.000        AM    =   .20000

                    TIME  =   2.6973          RANGE =   2676.7        FUEL  =   2081.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    29.057          CPU  TIME USED IN PREVIOUS TASK =   .92200

 RGSAVE
IT2          WT            H             AM       TAC***         FUEL       RUN***        XN2?   T10   T11 OPTION
201   .4417E+06   50.00       .2000        .5069E-01   346.1         13.47        1.000        -1.    0.     1


UNPACK       211     51210         5          1         2         19        10.        22
  1.0000       1.0000       .47170E+06  12.000      21.000            51210 0.                   72  2.0000       1111112111
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       NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/11/77           10.01.15.          PAGE   35

                                                     TEST PROBLEM NO. 1
                                        .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                        .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.

 SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

  THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                CLIMB PATH HISTORY

   TIME         RANGE          WEIGHT        FUEL          ALTITUDE      MACH NO.    V (KNOTS)   GAMPD         NET THRUST         SFC

      0.000   0.                480089.    0.              65932.         2.557        1466.         7.27  -12687.36        -.10127

       .296    7.0693           480079.     10.42          67635.         2.461        1401.        -1.51  -11574.06        -.10609

       .515   12.135            480072.     17.73          64782.         2.392        1371.         2.46  -12936.64        -.10851

       .879   18.905            480067.     26.43          72191.         2.173        1251.         7.69  -11113.29        -.11503

      1.147   25.368            480056.     33.35          68865.         2.127        1222.        -4.01  -12615.45        -.11037

      1.468   31.898            480044.     41.43          65539.         2.085        1192.        -4.74  -13030.40        -.12196

      1.807   38.443            480038.     50.96          62713.         2.027        1162.          .77  -13581.65        -.13226

      2.180   45.078            480029.     60.33          66691.         1.830        1049.          .15  -12202.91        -.10788

      2.507   50.944            480021.     67.92          62915.         1.778        1019.        -6.03  -14135.73        -.10061

      2.853   55.881            480012.     76.96          59168.         1.726         988.        -1.46  -14951.07        -.10967

      3.277   63.445            480002.     87.52          61376.         1.560         883.        -1.25  -14351.36        -.95179E-01

      3.757   73.357            479998.     90.24          57292.         1.487         852.        -2.43  -18734.93        -.94561E-01

      4.271   77.235            479977.    112.1           57793.         1.317         757.        -3.07  -23300.03        -.99669E-01

      4.773   81.377            479969.    120.7           53766.         1.260         722.        -6.76  -20593.46        -.79118E-01

      5.376   83.873            479968.    141.3           48695.         1.205         691.        -6.31  -18507.84        -.11580

      5.956   96.928            479926.    163.0           44146.         1.147         657.        -2.45  -8781.163        -.76995

      6.908  106.16             479897.    192.3           45776.          .889         505.        -1.65   921.8365        1.6238

      8.265  117.17             479861.    228.5           40073.          .836         479.        -4.27  1110.968         1.6096

      9.797  129.38             479810.    279.6           36872.          .776         447.        -4.01  1334.769         1.6109

     11.561  141.56             479741.    348.5           29671.          .699         412.        -4.56  1561.657         1.6798

     13.287  153.57             479653.    436.1           23513.          .686         416.        -5.33  1962.289         1.7764

     15.868  173.73             476666.   3426.            20000.          .800         491.        -1.44  47079.05         1.6565

 26. ****** SELECT END     OPTION    1 ******
                            WT    =   .47666E+06      H     =   20000.          XM    =   .80000

                            TIME  =   1.7123          RANGE =   2451.1          FUEL  =   .10780E+06

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    15.325            CPU TIME USED IN PREVIOUS TASK =   5.7400

 RGSAVE
ITZ           WT             H            XM       TAC***         FUEL       RUN***          XNZZ    F10    F11 OPTION
121   .4767E+06    .2000E+05    .8000         .2441         3426.         173.2        1.000       -0.     0.      1


UNPACK        171      51010          5          1          0          10         10.         17
 0.           5.           0.            4.0030      1.0000            51010  2.0000                17 0.           1111112111
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                                   TEST PROBLEM NO. 1
                  .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                  .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                               LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME       RANGE       WEIGHT      FUEL       ALTITUDE    MACH NO.   V (KNOTS)   GAMMA      NET THRUST      SFC

    0.000   0.            470267.    0.          20000.       .800        491.      27.56   247796.7       1.8685
     .056    .39623       469856.    406.2       21250.       .800        489.      26.81   236766.7       1.8476
     .112    .81419       469450.    817.1       22500.       .800        486.      25.37   225636.7       1.8266
     .173   1.2619        469044.    1218.       23750.       .800        484.      23.90   215596.7       1.8067
     .238   1.7396        468637.    1625.       25000.       .800        481.      22.63   204869.1       1.7891
     .306   2.2491        468229.    2032.       26250.       .800        479.      21.33   195196.2       1.7712
     .379   2.7936        467821.    2441.       27500.       .800        476.      20.08   185767.6       1.7597
     .457   3.3757        467411.    2851.       28750.       .800        474.      18.87   176889.9       1.7292
     .541   3.9976        467000.    3262.       30000.       .800        471.      17.70   168169.3       1.7082
     .632   4.6660        466586.    3676.       31250.       .800        469.      16.57   159875.2       1.6875
     .726   5.3815        466169.    4092.       32500.       .800        466.      15.46   151851.3       1.6666
     .829   6.1532        465748.    4514.       33750.       .800        463.      14.39   144182.7       1.6458
     .940   6.9866        465122.    4940.       35000.       .800        461.      13.19   136887.4       1.6257
    1.064   7.9123        464875.    5386.       36250.       .800        459.      11.61   129637.1       1.6064
    1.209   8.9996        464390.    5872.       37500.       .800        459.      10.21   122053.8       1.6069
    1.368  10.199         463885.    6377.       38750.       .800        459.       9.29   116336.3       1.6076
    1.544  11.577         463358.    6904.       40000.       .800        459.       8.32   108217.9       1.6080
    1.741  13.071         462806.    7458.       41250.       .800        459.       7.49   101889.9       1.6086
    1.963  14.781         462217.    8045.       42500.       .800        459.       6.55   95927.33       1.6096
    2.215  16.619         461587.    8675.       43750.       .800        459.       5.78   90309.97       1.6102
    2.507  18.941         460900.    9362.       45000.       .800        459.       5.29   95014.39       1.6111
 26. ****** SELECT END     OPTION   1 ******
                        WT    =   .46090E+06      H     =    45000.         XM    =   .80000

                        TIME  =   2.0998          RANGE =    2676.3         FUEL  =   4401.9
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    36.433          CPU TIME USED IN PREVIOUS TASK =   1.0448

 RESAVE
 ITZ           WT              H           XM        TAC***         FUEL       FUN***         XNZZ    F10    F11 OPTION
 141   .46090E+06   .45000E+05   .8000       .41790E-01   9362.        18.06        1.000      -0.     0.     1


UNPACK        151      51010          5           1          0          10        10.          7
 0.           1.           0.          1.0000       200.00           51010 0.                          7 0.          1111112111
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                                          TEST PROBLEM NO. 1
                          .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                          .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                              CLIMB PATH HISTORY

  TIME        RANGE         WEIGHT      FUEL         ALTITUDE    MACH NO.    V (KNOTS)    GAMFD       NET THRUST      SFC

   0.000    0.               437108.   0.             45000.        .800         459.      -14.91   851.2951       1.6016

    .211     1.6230          437103.    5.163         42373.        .863         493.       -9.51   981.0295       1.6125

    .475     3.7765          437095.   12.60          41431.        .850         487.       -4.09   1064.466       1.6124

    .747     5.9633          437087.   20.50          40490.        .841         482.       -4.02   1107.749       1.6093

   1.025     8.1841          437079.   28.89          39546.        .831         476.       -3.96   1142.633       1.6059

   1.312    10.440           437070.   37.80          38604.        .821         470.       -3.90   1183.099       1.6026

   1.607    12.732           437061.   47.28          37662.        .811         465.       -3.84   1226.347       1.5995

   1.910    15.062           437050.   57.37          36719.        .800         459.       -3.78   1269.413       1.5973

   2.223    17.430           437040.   68.11          35777.        .790         453.       -3.75   1309.965       1.6018

   2.539    19.795           437028.   79.35          34835.        .775         447.       -3.74   1345.346       1.6136

   2.861    22.169           437017.   91.19          33893.        .761         441.       -3.73   1380.606       1.6259

   3.188    24.552           437004.   103.6          32950.        .749         435.       -3.72   1417.211       1.6382

   3.521    26.962           436991.   116.7          32008.        .734         428.       -3.70   1454.839       1.6502

   3.860    29.340           436977.   130.5          31066.        .720         422.       -3.69   1492.613       1.6623

   4.205    31.746           436963.   145.1          30124.        .706         416.       -3.68   1531.060       1.6741

   4.557    34.159           436947.   160.4          29182.        .692         409.       -3.67   1571.779       1.6858

   4.916    36.590           436931.   176.5          28239.        .678         402.       -3.66   1612.115       1.6975

   5.282    39.037           436914.   193.4          27297.        .664         396.       -3.65   1653.713       1.7089

   5.655    41.442           436897.   211.3          26355.        .650         389.       -3.64   1695.582       1.7213

   6.036    43.886           436878.   230.1          25413.        .636         382.       -3.63   1739.511       1.7336

   6.426    46.333           436859.   250.0          24470.        .621         375.       -2.87   1784.712       1.7457

   9.102    66.173           434026.   3080.          20000.        .800         491.       -2.17  43575.45        1.6561
 28. ******* XCLECT END     OPTION   1 ******
                    WT     =   .43403E+06      H      =   20000.         AM     =   .80000

                    TIME   =   2.5377          RANGE =   2843.1         FUEL   =   23793.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   40.987          CPU TIME USED IN PREVIOUS TASK =   4.2420

 RGSAVE
ITZ           WT            H            AM        TAC***         FUEL        RUN***         XNZZ   E10   E11 OPTION
161    .4340E+06    .2000E+05    .8000          .1517        3080.        66.17        1.000        -0.     0.     1


UNPACK          171      51010          5           1          0         10        10.         17
 0.             0.            0.           5.0000      1.0000            51010  2.0000                17 0.           1111112111
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   WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/11/77          10.01.25.          PAGE   38

                                          TEST PROBLEM NO. 1
                               .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                               .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                        LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME         RANGE         WEIGHT      FUEL         ALTITUDE      MACH NO.    V (KNOTS)   GAMFD        NET THRUST       SFC

    0.000   0.               428223.    0.             20000.          .800         491.       -4.66   2475.273         1.8497

     .236    1.9169          428205.     18.29         19050.          .790         487.       -4.67   2537.879         1.8611

     .473    3.8233          428186.     37.28         18100.          .780         482.       -4.70   2601.221         1.8669

     .711    5.7197          428166.     56.68         17150.          .770         478.       -4.72   2661.727         1.8693

     .949    7.6063          428146.     76.72         16200.          .760         474.       -4.75   2722.199         1.8717

    1.189    9.4837          428126.     97.32         15250.          .750         469.       -4.77   2783.838         1.8739

    1.430    11.352          428104.     118.5         14300.          .740         465.       -4.79   2846.047         1.8761

    1.672    13.213          428083.     140.3         13350.          .730         460.       -4.81   2906.706         1.8783

    1.916    15.065          428060.     162.8         12400.          .720         455.       -4.83   2965.998         1.8805

    2.162    16.910          428037.     185.8         11450.          .710         450.       -4.85   3025.305         1.8828

    2.409    18.749          428013.     209.5         10500.          .700         446.       -4.87   3086.361         1.8848

    2.658    20.562          427989.     233.9          9550.          .690         441.       -4.88   3148.502         1.8866

    2.909    22.409          427964.     259.0          8600.          .680         436.       -4.89   3210.649         1.8885

    3.162    24.232          427938.     284.9          7650.          .670         431.       -4.90   3274.196         1.8901

    3.417    26.051          427911.     311.5          6700.          .660         426.       -4.91   3339.889         1.8914

    3.676    27.867          427884.     339.0          5750.          .650         421.       -4.92   3402.488         1.8942

    3.937    29.681          427856.     367.1          4800.          .640         416.       -4.92   3470.562         1.8961

    4.201    31.494          427826.     396.5          3850.          .630         411.       -4.93   3539.420         1.8980

    4.468    33.306          427796.     426.8          2900.          .620         406.       -4.93   3609.511         1.8999

    4.739    35.119          427765.     458.0          1950.          .610         401.       -4.93   3678.635         1.9016

    5.013    36.933          427732.     490.4          1000.          .600         395.       -4.92   3751.957         1.9028
 30. ****** SELECT END     OPTION    1 ******
                           WT     =   .42773E+06      H      =   1000.0         AM     =   .60000

                           TIME   =   2.7728          RANGE =    2989.3         FUEL   =   5005.4

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    41.965          CPU TIME USED IN PREVIOUS TASK =   .94000

 RGSAVE
ITZ          WT              H            AM       TAC***         FUEL       RUN***          YNZZ    E10   E11 OPTION
101   .4277E+06   1000.         .6000        .8355E-01   490.4         36.93        1.000     -0.    0.      1


UNPACK        191      51010         5         1         0         10         10.         17
 0.            360.00       1.0000      0.           0.                     51010  3.0000              17 0.            1111112111
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                                         TEST PROBLEM NO. 1
                        .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                        .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                    LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE         WEIGHT      FUEL         ALTITUDE    MACH NO.   V (KNOTS)  GAMFD        NET THRUST      SFC

    0.000  0.               425009.  0.              1000.        .600        395.       -.55  3751.964      1.9020

     .126   .81506          424996.   14.93           952.        .580        382.       -.55  3724.616      1.9060

     .258   1.6474          424978.   30.53           905.        .560        369.       -.54  3700.512      1.9084

     .397   2.4803          424962.   46.81           857.        .540        356.       -.53  3677.635      1.9104

     .542   3.3262          424945.   63.79           810.        .520        343.       -.53  3657.019      1.9118

     .694   4.1771          424927.   81.44           763.        .500        330.       -.53  3638.261      1.9126

     .852   5.0289          424909.   99.70           715.        .480        317.       -.53  3620.948      1.9130

    1.016   5.8769          424890.   118.7           667.        .460        303.       -.53  3606.668      1.9126

    1.186   6.7153          424871.   137.1           620.        .440        290.       -.54  3593.826      1.9118

    1.360   7.5172          424851.   158.0           572.        .420        277.       -.55  3582.559      1.9105

    1.537   8.3353          424831.   178.1           525.        .400        264.       -.57  3574.131      1.9085

    1.715   9.1012          424810.   198.6           477.        .380        251.       -.60  3572.771      1.9050

    1.894   9.9266          424790.   219.6           430.        .360        238.       -.64  3572.751      1.9011

    2.069   10.503          424770.   238.5           382.        .340        224.       -.69  3574.638      1.8970

    2.240   11.126          424751.   257.8           335.        .320        211.       -.76  3577.549      1.8926

    2.404   11.682          424732.   276.2           288.        .300        198.       -.86  3581.470      1.8883

    2.558   12.173          424715.   293.6           240.        .280        185.       -.99  3572.453      1.8869

    2.700   12.597          424699.   309.5           192.        .260        172.      -1.16  3563.052      1.8862

    2.829   12.953          424685.   323.9           145.        .240        159.      -1.40  3555.260      1.8708

    2.944   13.244          424672.   336.6            98.        .220        145.      -1.73  3540.196      1.8769

    3.045   13.476          424661.   347.8            50.        .200        132.      -1.93  3516.812      1.8878
 32. ****** SELECT END     OPTION   1 ******
                     WT     =   .42466E+06     H      =    50.000        AM     =   .20000

                     TIME   =   2.8805         RANGE =    2966.3        FUEL   =   2723.8

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   62.929          CPU TIME USED IN PREVIOUS TASK =   .92208

 RGSAVE
II2          WT              H            AM       TAC***         FUEL       RUN***         ENZ7   E10    E11 OPTION
201   .42467E+06   50.00         .2000         .5074E-01   347.8        13.48         1.000        -0.    0.     1


UNPACK        211      51210          5          1          2          10        10.         22
  1.0000        1.0000       .42178E+06  12.000       21.000            51210 0.                    22  2.0000      1111112111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/11/77            19.01.35.          PAGE   67

                                                      TEST PROBLEM NO. 1
                                   .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                   .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                               CLIMB PATH HISTORY

  TIME          RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMMA        NET THRUST        SFC

     0.000   0.                476721.    0.              65932.        2.568         1461.         1.91  -12613.79      -.18106

      .295    7.0261           476711.     10.39          67359.        2.437         1398.        -1.79  -11673.93      -.16795

      .512    12.037           476703.     17.72          66519.        2.308         1369.         2.37  -12909.46      -.16237

      .830    19.991           476694.     26.69          71902.        2.169         1269.         2.62  -11073.76      -.11652

     1.144    25.363           476687.     33.66          69533.        2.126         1228.        -4.79  -12576.19      -.11190

     1.470    31.872           476679.     41.88          65294.        2.076         1190.        -4.76  -13006.06      -.12351

     1.804    39.408           476670.     51.45          61975.        2.023         1159.          .79  -13559.14      -.13370

     2.163    45.038           476660.     60.83          66430.        1.826         1068.          .16  -17177.09      -.10918

     2.501    51.422           476653.     68.48          62683.        1.775         1018.        -6.03  -14101.39      -.10182

     2.852    56.676           476643.     77.61          58936.        1.721          987.        -1.42  -14927.79      -.11058

     3.278    63.286           476633.     88.23          61162.        1.538          881.        -1.23  -14354.70      -.96301E-01

     3.756    70.202           476621.     100.1          57010.        1.496          851.        -2.41  -18739.12      -.95367E-01

     4.260    77.041           476608.     113.0          57636.        1.310          751.        -3.06  -23333.65      -.60229E-01

     4.771    8   93           476595.     125.7          53081.        1.258          771.        -6.79  -20539.10      -.79886E-01

     5.324    93.672           476579.     142.3          48555.        1.203          698.        -6.29  -19416.67      -.11700

     5.954    96.718           476557.     164.1          44030.        1.166          657.        -2.43  -8856.420      -.25467

     6.903    105.89           476528.     193.1          45168.         .889          509.        -1.52   925.5566      1.6234

     8.247    116.93           476491.     230.0          39993.         .835          479.        -4.23   1115.505      1.6809

     9.807    129.91           476440.     281.3          34815.         .775          447.        -3.9.   1337.978      1.6119

    11.955    141.42           476370.     350.7          29645.         .699          412.        -4.56   1543.967      1.6786

    13.301    153.42           476283.     439.6          23813.         .606          416.        -3.37   1966.265      1.7760

    15.851    173.09           473105.     3616.          20000.         .500          491.        -1.46   46937.46      1.6579

 35. ****** XCLECT END     OPTION   1 ******
                        WT     =    .47331E+06      H      =    20000.         AM     =    .50000

                        TIME   =    1.7448          RANGE  =    2498.6         FUEL   =    .19616E+06

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    49.709          CPU TIME USED IN PREVIOUS TASK =    5.7660

 RGSAVE
ITZ          WT            H           AM       TAC***        FUEL       FUN***        XNZZ   E10   E11 OPTION
121   .47331E+06   .20000E+05   .5000        .2666       3616.       173.1       1.009     -0.    0.     1

UNPACK        131      51010          5           1          0         10         10.        17
 0.           0.           0.            5.0000      1.0000           51010  2.0000              17 0.           1111112111
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                                   TEST PROBLEM NO. 1
                  .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                  .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAMFD      NET THRUST      SFC

    0.000   0.            466923.   0.            20000.        .800         491.       27.79   247205.7      1.8605
     .056    .39823       466521.    402.9        21250.        .800         489.       27.05   236765.8      1.8426
     .111    .82599       466119.    805.6        22500.        .800         486.       25.60   225635.9      1.8245
     .172   1.2493        465715.   1208.         23750.        .800         484.       24.19   215008.0      1.8067
     .236   1.7222        465312.   1612.         25000.        .800         481.       22.85   204850.0      1.7891
     .304   2.2269        464908.   2016.         26250.        .800         479.       21.52   195147.6      1.7712
     .376   2.7658        464503.   2421.         27500.        .800         476.       20.26   185749.9      1.7502
     .456   3.3418        464097.   2827.         28750.        .800         474.       19.05   176812.6      1.7291
     .536   3.9583        463689.   3235.         30000.        .800         471.       17.87   168172.1      1.7082
     .624   4.6195        463279.   3644.         31250.        .800         469.       16.73   159841.2      1.6876
     .719   5.3278        462866.   4057.         32500.        .800         466.       15.62   151956.6      1.6665
     .821   6.0915        462449.   4474.         33750.        .800         463.       14.56   144185.6      1.6458
     .932   6.9159        462027.   4897.         35000.        .800         461.       13.33   136811.1      1.6251
    1.054   7.9314        461588.   5336.         36250.        .800         459.       11.74   129676.1      1.6066
    1.197   8.9061        461105.   5818.         37500.        .800         459.       10.33   122067.3      1.6068
    1.355  10.091         460606.   6318.         38750.        .800         459.        9.36   114978.8      1.6073
    1.529  11.406         460086.   6838.         40000.        .800         459.        8.43   108222.9      1.6079
    1.723  12.875         459540.   7384.         41250.        .800         459.        7.52   101895.7      1.6085
    1.941  14.530         458961.   7962.         42500.        .800         459.        6.65    95932.93     1.6093
    2.190  16.417         458341.   8582.         43750.        .800         459.        5.88    90314.99     1.6101
    2.476  18.599         457667.   9256.         45000.        .800         459.        5.39    85020.74     1.6110
 37. ****** SELECT END    OPTION   1 ******
                        WT    =   .45767E+06      H     =   45000.          AM     =   .80000

                        TIME  =   2.0925          RANGE =   2671.7          FUEL   =   6381.6

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


 CUMULATIVE CPU TIME =   50.713          CPU TIME USED IN PREVIOUS TASK =   1.0720

 RGSAVE
III7        WT            H            AM        TAC***        FUEL       RUN***        XNZZ   E10  .E11 OPTION
141   .45767E+06   .45000E+05   .8000        .4127E-01   9256.        18.60        1.000      -0.    0.     1

UNPACK        151      51010          5           1          0          10        10.          7
 0.           0.            0.            1.0000      200.00            51010 0.                     7 0.            1111112111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/11/77            19.01.42.          PAGE   46

                                          TEST PROBLEM NO. 1
                            .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                            .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                    CLIMB PATH HISTORY

  TIME         RANGE         WEIGHT       FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMMA        NET THRUST      SFC

    0.000   0.              434156.    0.              43000.          .880          499.       -14.07   851.7574        1.6015

     .211    1.6273         434151.     5.176          42373.          .868          493.        -9.49   981.9742        1.5126

     .476    3.7839         434144.    12.62           41451.          .858          487.        -6.89   1044.508        1.6126

     .748    5.9776         434136.    20.53           40488.          .841          482.        -4.07   1102.743        1.6092

    1.027    8.1973         434127.    28.93           39546.          .831          476.        -3.96   1142.468        1.6059

    1.314   10.456          434118.    37.86           38606.          .821          470.        -3.89   1183.936        1.6025

    1.609   12.751          434109.    47.35           37662.          .811          465.        -3.83   1226.387        1.5996

    1.913   15.083          434099.    57.65           36719.          .800          459.        -3.77   1269.450        1.5973

    2.226   17.456          434088.    68.20           35777.          .789          453.        -3.76   1310.081        1.6010

    2.542   19.822          434077.    79.65           34835.          .775          447.        -3.74   1345.389        1.6133

    2.866   22.190          434065.    91.38           33893.          .761          441.        -3.72   1380.443        1.6259

    3.192   24.592          434052.   103.8            32950.          .749          435.        -3.71   1417.769        1.6381

    3.525   26.975          434039.   116.9            32008.          .736          428.        -3.70   1454.077        1.6501

    3.865   29.375          434025.   130.7            31066.          .720          422.        -3.69   1492.651        1.6623

    4.210   31.782          434011.   145.7            30124.          .706          416.        -3.68   1531.980        1.6740

    4.562   34.197          433996.   160.5            29182.          .692          409.        -3.67   1571.021        1.6858

    4.921   36.623          433979.   176.6            28239.          .679          402.        -3.66   1612.158        1.6976

    5.288   39.049          433962.   193.6            27297.          .664          396.        -3.66   1653.757        1.7088

    5.661   41.486          433945.   211.5            26355.          .650          389.        -3.63   1695.678        1.7212

    6.043   43.930          433925.   230.6            25413.          .636          382.        -3.67   1739.559        1.7335

    6.432   46.380          433906.   250.3            24470.          .621          375.        -2.07   1784.762        1.7456

    9.100   66.213          431087.  3069.             20000.          .800          491.        -2.12   43627.40        1.6567

 39. ****** SELECT END     OPTION   1 ******
                             WT    =   .43109E+06      H     =   20000.          AM    =   .80000

                             TIME  =   2.5699          RANGE =   2590.3          FUEL  =   23511.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    56.675            CPU TIME USED IN PREVIOUS TASK =   4.7620

 RGSAVE
ITZ           WT              H            AM        TAC***          FUEL        RUN***          XNZZ    Y10    Y11 OPTION
161    .4311E+06    .2000E+05    .8000        .1519          3069.         66.21          1.000         -0.     0.      1


UNPACK         171      51010           5           1           0          19         10.          17
 0.            0.             0.            5.010       1.0000             51010  2.[illegible]                   17 0.            1111112111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/11/77             10.01.43.           PAGE   45

                                              TEST PROBLEM NO. 1
                                    .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                    .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY

   TIME          RANGE          WEIGHT        FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMMA          NET THRUST          SFC

      0.000   0.                425297.   0.               20000.          .800          491.          -4.68   2475.295           1.0497

       .235     1.9096          425279.    18.22           19050.          .790          487.          -4.69   2537.091           1.0611

       .471     3.8088          425260.    37.06           18100.          .780          482.          -4.72   2601.232           1.0660

       .708     5.6978          425241.    56.47           17150.          .770          478.          -4.74   2661.730           1.0693

       .946     7.5769          425221.    76.42           16200.          .760          474.          -4.76   2722.210           1.0717

      1.186     9.4468          425200.    96.95           15250.          .750          469.          -4.79   2783.049           1.0734

      1.425    11.308           425179.   118.1            14300.          .740          465.          -4.81   2846.050           1.0761

      1.666    13.160           425157.   139.9            13350.          .730          460.          -4.83   2906.717           1.0782

      1.909    15.005           425135.   162.1            12400.          .720          455.          -4.85   2966.010           1.0805

      2.153    16.843           425112.   185.1            11450.          .710          450.          -4.87   3025.317           1.0828

      2.399    18.674           425088.   208.7            10500.          .700          446.          -4.89   3086.373           1.0848

      2.647    20.499           425064.   233.0             9550.          .690          441.          -4.90   3148.514           1.0866

      2.897    22.319           425039.   258.0             8600.          .680          436.          -4.91   3210.660           1.0885

      3.149    24.133           425013.   283.7             7650.          .670          431.          -4.93   3274.118           1.0901

      3.403    25.944           424987.   310.2             6700.          .660          426.          -4.93   3339.021           1.0914

      3.661    27.753           424960.   337.6             5750.          .650          421.          -4.94   3407.500           1.0942

      3.920    29.559           424931.   365.9             4800.          .640          416.          -4.95   3475.574           1.0961

      4.183    31.367           424902.   394.9             3850.          .630          411.          -4.95   3539.432           1.0980

      4.449    33.167           424872.   425.0             2900.          .620          406.          -4.95   3609.524           1.0999

      4.719    34.972           424841.   456.1             1950.          .610          401.          -4.95   3679.668           1.1016

      4.992    36.778           424809.   488.3             1000.          .600          395.          -4.95   3751.979           1.1028
 41. ****** SELECT END    OPTION   1 ******
                              WT     =   .42481E+06      H      =    1000.0          AM    =   .60000

                              TIME   =   2.0051          RANGE  =    2956.5          FUEL  =   5789.9

 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    55.455          CPU TIME USED IN PREVIOUS TASK =   .96200

  PCSAVE
 IT2          WT              H              AM       TAC***          FUEL        RUN***         XNZZ   C10   C11 OPTION
 101   .42481E+06   1000.        .6000          .8321E-01   488.3         36.78         1.000        -0.    0.     1

 UNPACK        191      51010          5         1         1         10         15.        17
  0.            360.00       1.5000     0.          0.                     51010  1.0000              17 0.          1111112111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/11/77          19.01.45.         PAGE   44

                                              TEST PROBLEM NO. 1
                              .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                              .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME          RANGE         WEIGHT       FUEL          ALTITUDE     MACH NO.    V (KNOTS)   GAMMA        NET THRUST       SFC

    0.000   0.               422094.   0.               1000.         .600         395.         -.55    3751.977       1.9079

     .125    .91157          422083.    14.87            952.         .580         382.         -.55    3726.638       1.9068

     .257   1.6356           422068.    30.49            905.         .560         369.         -.54    3702.579       1.9096

     .395   2.4725           422051.    46.63            857.         .540         356.         -.53    3677.655       1.9106

     .540   3.3137           422034.    63.55            810.         .520         343.         -.53    3657.062       1.9118

     .691   4.1671           422017.    81.15            763.         .500         330.         -.53    3638.298       1.9126

     .849   5.0170           421999.    99.42            715.         .480         317.         -.53    3620.982       1.9130

    1.013   5.8586           421980.    118.3            667.         .460         303.         -.53    3606.709       1.9126

    1.183   6.6960           421961.    137.7            620.         .440         290.         -.54    3593.876       1.9118

    1.356   7.5175           421940.    157.6            572.         .420         277.         -.55    3587.623       1.9105

    1.533   8.3157           421920.    177.8            525.         .400         264.         -.57    3576.706       1.9085

    1.712   9.2076           421900.    198.1            477.         .380         251.         -.60    3572.965       1.9069

    1.891   9.9091           421880.    218.3            430.         .360         238.         -.64    3572.869       1.9011

    2.067   10.487           421860.    238.2            382.         .340         224.         -.69    3576.589       1.8969

    2.238   11.110           421840.    257.6            335.         .320         211.         -.76    3577.746       1.8925

    2.402   11.670           421822.    276.1            288.         .300         198.         -.85    3591.677       1.8881

    2.557   12.166           421804.    293.5            240.         .280         185.         -.98    3579.791       1.8867

    2.700   12.590           421788.    309.6            192.         .260         172.        -1.15    3563.511       1.8850

    2.830   12.969           421774.    324.0            145.         .240         159.        -1.39    3555.896       1.8785

    2.946   13.261           421761.    336.8             98.         .220         145.        -1.72    3541.093       1.8766

    3.047   13.475           421750.    348.0             50.         .200         132.        -1.91    3515.116       1.8871
 63. ****** SELECT END    OPTION   1 ******
                         WT    =   .42175E+06      M    =   50.000         AM    =   .20000

                         TIME  =   2.9125         RANGE =   2933.3         FUEL  =   2713.9

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   56.921           CPU TIME USED IN PREVIOUS TASK =   .97600

 RGSAVE
IT2          WT            H              AM       TAC***        FUEL       RUN***        XN22   F10   F11 OPTION
201   .42175E+06   50.00        .2000        .5878E-01   348.0         13.47        1.003        -0.    0.     1

UNPACK        211      51210          5          1         2         18         10.        22
  1.0000       1.0000      .42178E+06  12.000       75.000           51210 0.                      22  2.0000      1111112111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/11/77          15.01.46.          PAGE   47

                                                        TEST PROBLEM NO. 1
                                       .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                       .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                              INPUT TO LANDING CALCULATIONS
WING REFERENCE AREA  (SF)                                  SREF   =    8993.000
FLAT PLATE AREA OF GEAR (SF)                               SPLG   =    200.0000
FLAT PLATE DRAG COEFF OF GEAR                              CDPLG  =    .5000000
GROUND ROLL BODY ANGLE (DEG)                               AG     =    .2500000
MAXIMUM GROUND ROTATION ANGLE (DEG)                        ARAVG  =    20.00000
WING INCIDENCE (DEG)                                       WINCID=   -.7000000
THEORETICAL WING ASPECT RATIO                              ARTHEO=    2.000000
WING LEADING EDGE SWEEP ANGLE (DEG)                        WSLEFC=    60.00000
TOTAL LIFT LIFT CURVE SLOPE (PER DEG)                      CLATOT=    .5200000E-01
LIFT COEF AT ZERO ANGLE OF ATTACK                          CL0    =  0.
WING TAPER RATIO                                           TRATIO=    .2100000
INDUCED DRAG FACTOR                                        CFK    =    .1890000
GROUND ROLL FRICTION COEFFICIENT                           GRNDFL=    .5500000
DRAG COEFF AT ZERO LIFT                                    CD0    =    .8620000E-02
WEIGHT AT START OF LANDING  (LB)                           WL     =    421769.9
MAXIMUM GROUND ROLL (FT)  IGNORED, IF ZERO                 XMAXG  =    7400.000
FLAP SPAN TO EXPOSED WING SPAN RATIO                       SFORE =    .6600000
FLAPDEFLECTION (DEG)                                       FLAPDL=    45.00000
AVERAGE FLAP CHORD TO WING CHORD RATIO                     CFOCAV=    .1500000
FLAT PLATE AREA OF DRAG CHUTE (SF)                         SPCHUT=  0.
FLAT PLATE DRAG COEFF OF CHUTE                             CDPCHT=  0.
LANDING  THRUST (LB)                                       FNL    =  0.

                              OUTPUT FROM LANDING CALCULATIONS

MAXIMUM WING LIFT COEFFICIENT                              CLMAX  =    1.196571
MAXIMUM WING PLUS FLAP LIFT COEFFICIENT                    CLMAXF=    1.420701
FLAP LIFT COEFFICIENT INCREMENT                            DFLCLF=    .3161957
TOUCHDOWN WING PLUS FLAT LIFT COEFFICIENT                  CLTDF  =    .9573190
TOUCHDOWN BODY ANGLE (DEG)                                 ATD    =    1.173699
TOUCHDOWN WING LIFT COEFFICIENT                            CLTD   =    10.83358
TOUCHDOWN SPEED (KNOTS)                                    VTD    =    108.5159
SPEED AT OBSTACLE (KNOTS)                                  V50    =    119.3095
LIFT COEFFICIENT AT OBSTACLE                               CL50   =    .9693187
DRAG COEFFICIENT AT OBSTACLE                               CD50   =    .1393944
DRAG COEFFICIENT AT TOUCHDOWN                              CDTD   =    .2098771
DRAG COEFFICIENT OF LANDING GEAR                           CDLG   =    .1113115E-01
DRAG COEFFICIENT DURING GROUND ROLL                        CDG    =    .1983421E-01
AIR DISTANCE (FT)                                          XAIR   =    971.3795
RATE OF SINK  AT OBSTACLE (FPS)                            R/S    =    29.91376
FLIGHT PATH ANGLE AT OBSTACLE (DEG)                        GAM50  =    8.266915
GROUND ROLL DISTANCE (FT)                                  XG     =    1666.659
POWER OFF STALL SPEED (KNOTS)                              VSTAL  =    90.66236
GROUND ROLL LIFT COEFFICIENT                               CLG    =   -.2395179E-01
DRAG COEFFICIENT OF THE CHUTE                              CDCHUT=  0.

 65. ****** SELECT END    OPTION  17 ******
                          WT    =   .42179E+06     H     =    50.000          AM    =   .20000

                          TIME  =   7.9632         RANGE =    3886.0          FUEL  =   368.07

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   56.925          CPU TIME USED IN PREVIOUS TASK =   .80000E-01

 RGSAVE
ITZ          WT             H             AM        TAC***         FUEL        RUN***          XNZZ   E10   E11 OPTION
221   .42179E+06   50.00        .2000      0.           0.           0.            1.000      -0.    0.     17
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[illegible] AIRCRAFT PERFORMANCE PROGRAM                              01/11/77          10.01.47.         PAGE   49

                                            TEST PROBLEM NO. 1
                                 .....  TOTAL RANGE TO BE DETERMINED.  ITERATE TO FIND WEIGHT AT END OF
                                 .....  CRUISE.  NO IN-FLIGHT ENGINE SCALING REQUESTED.


                                 MISSION TIME HISTORY                           PAYLOAD =      0.

                                 ******INCREMENTAL*******     **********TOTAL***********
  WT        MACH     ALTITUDE   RANGE    TIME(HRS)     FUEL      RANGE   TIME(HRS)     FUEL        OPTION

  750000.   .299           0.    0.00      0.000         0.        0.       0.00          0.    100
  745201.   .293          50.    0.00       .087      4799.        0.        .09       4799.     17
  736918.   .503        1000.    2.93       .012      8283.        3.        .10      13082.      1
  733769.   .603        5000.    1.69       .005      3149.        5.        .10      16231.      1
  720480.   .800       31526.   10.69       .025     13289.       15.        .13      29520.      1
  714050.   .953       39000.    8.50       .016      6431.       24.        .14      35950.      1
  697187.  1.599       47500.   31.72       .045     16863.       56.        .19      52813.      1
  671705.  2.600       52971.   75.66       .066     25482.      131.        .25      78295.      1
  665055.  2.900       57860.   23.69       .015      6650.      155.        .27      84945.      1
  660884.  3.000       65937.   18.96       .011      4171.      174.        .28      89116.      1
  476721.  2.560       65937. 2324.72      1.476    184163.     2499.       1.76     273279.      6
  473305.   .800       39000.  173.09       .256      3416.     2672.       2.01     276695.      1
  466923.   .800       30000.    0.00       .083      6382.     2672.       2.09     283077.     17
  457667.   .900       45000.   18.60       .041      9256.     2690.       2.13     292333.      1
  434156.   .900       45000.  208.07       .446     23511.     2899.       2.57     315844.      7
  431087.   .800       30000.   58.22       .152      3069.     2957.       2.72     318913.      1
  425297.   .800       30000.    0.00       .083      5790.     2957.       2.81     324703.     17
  424809.   .600        1000.   36.70       .083       488.     2993.       2.89     325191.      1
  422098.   .600        1000.    0.00       .024      2711.     2993.       2.91     327902.     17
  421750.   .299          50.   13.47       .051       348.     3007.       2.96     328250.      1
  421750.   .299          50.    0.00      0.000         0.     3007.       2.96     328250.     17
```

```
01/11/77  LRC ICOPS INDEPNDT 6600C-131K 01/21/75F
17.56.49. ACCT - RATE IS EXCEEDED
17.56.49.GT74105.
17.56.50.                            LRC COMPUTER COMPLEX
17.56.50.JOB.01.700.110000.5000.               44916   B
17.56.50.4322       180732          BLDG 1247A  CENT
17.56.50.USER.VAHL, WALTER A                    0009
17.56.50.106800 37350
17.56.50.FETCH,44916,,BINARY,,MISSION.
17.57.01.TIME          BG ATTACH
17.57.25.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.57.35.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.57.43.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.58.34.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.58.36.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.58.38.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.58.40.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.59.10.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.59.12.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.59.14.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
17.59.15.MC 06 FUNCT REJ ADDR  10000000   ST 1215 FN 26
18.00.05.TIME          E9 ATTACH
18.00.06.END     FETCH
18.00.07.DROPFIL.DCNS.ZOOKS.ZOUNDS.DAFILE.SCFILE.
18.00.10.MODE1.
18.00.10.MISSION.
18.02.00.STOP 77
18.02.00.REWIND(INPUT)
18.02.02.COPYCR(INPUT.DUMMY)
18.02.04.REWIND(DUMMY)
18.02.06.COPYSBF(DUMMY.OUTPUT)
18.02.08.COPYSBF(INPUT.OUTPUT)
18.02.11.SPPRINT(OUTPUT,3)
18.02.13.       0000341 O/S CALLS
18.02.13.CPU     57.514099 SEC.
18.02.13.PPU    758.727934 SEC.
18.02.14.CRU     10        RESOURCE UNITS
18.02.14.KWH      7.62     KILOWORD HOURS
13.25.07. GT74105.   3605 LINES PRINTED. LR21
```

3.0 PROBLEM NO. 2 - MACH 14 HYDROGEN FUELLED TURBOJET/ SCRAMJET PROPULSION, RANGE DETERMINATION

3.1 Vehicle Characteristics

Turbojet propulsion, 4 engines ($M = 0\text{-}4$)

Scramjet propulsion, 4 engines ($M = 4\text{-}14$)

H_2 fuel ($F/A = .0292$)

$M_{cruise} = 14$

Gross take-off weight = 7000,000 pounds

Operating weight empty = 200,000 pounds

Turbojet sea level corrected airflow = 1116.46 pounds/sec per engine

Inlet area = 78.26 ft^2 per engine

Vehicle reference area = 10,000 ft^2

Wing semi-thickness angle = 0^o

Inlet initial wedge angle = 6^o

Engine exhaust field pressure (p_n) = free-stream static pressure (p_∞)

Total range to be determined

3.2 Mission Characteristics

(1) Accelerating climb at max. power along prescribed path from $M=.3$, altitude = 2000 ft. until $q = 1500$ psf reached ($\approx M=1.4$); no take-off calculation

(2) Accelerating climb at max. power along constant $q = 1500$ psf path to $M=14$ (altitude = 116,978 ft)

(3) Constant altitude, constant C_L cruise to operating weight empty = 200,000 #

(4) Descent at max. L/D to $M = .3$, altitude = 2000 ft.

3.3 Propulsion Characteristics

Inlet capture ratio (A_c/A_i) vs. Inlet flow field Mach number (M_1)

M_1	A_c/A_i
0	.5645
3.99	.5645
4.0	.73
5	.85
6	1.0
14	1.0

Inlet pressure recovery (P_{t_3}/P_{t_1}) vs. Inlet flow field Mach number (M_1)

M_1	P_{t_3}/P_{t_1}
0	.95
1.0	.95
1.3	.944
1.65	.928
2.	.907
2.4	.872
2.75	.837
3.3	.772
3.9	.688
4.55	.590

Turbojet corrected airflow ($w\frac{\sqrt{\theta}}{\delta}$) vs. Inlet flow field total temperature (T_{t_1}) for base size engine

T_{t_1} (°R)	$w\frac{\sqrt{\theta}}{\delta}$ (#/sec)
400	429
508.449	429
557	410
608	390
700	347
800	307
930	266
1000	246
1070	230
1130	219
1250	201
1340	191
1400	185

Turbojet gross thrust per pound of airflow ($F_g/\dot{w}_a$) vs. Engine pressure ratio ($\log_{10} P_{t_3}/P_N$) and inlet flow field total temperature (T_{t_1})

$\text{Log}_{10}\ P_{t_3}/P_N$	T_{t_1} = 0°R	T_{t_1} = 5000°R
-.04561	72.7	72.7
-.01728	84.48	84.48

$\text{Log}_{10}\ P_{t_3}/P_N$	T_{t_1} = 0°R	T_{t_1} = 5000°R
.00346	88.45	88.45
.06145	97.22	97.22
.13862	106.15	106.15
.23249	116.38	116.38
.33806	127.95	127.95
.45332	144.34	144.34
.51348	150.0	150.0
.57426	154.02	154.02
.70114	161.47	161.47
.82769	167.69	167.69
1.14675	182.86	182.86
1.45332	198.69	198.69
1.48000	227.0	227.0
1.73957	232.73	232.73
2.00389	238.06	238.06
2.4000	246.0	246.0
	F_g/w_a (lbs/lb per sec)	

Turbojet fuel-air ratio (w_f/w_a) vs. Inlet flow field total temperature (T_{t_1})

T_{t_1}, °R	$\dot{w}_f/\dot{w}_a$
400	.0292
1200	.0292

Scramjet performance (I_{sp}) vs. Free-stream Mach number (M_∞) and inlet flow field total temperature (T_{t_1})

M	T_{t_1} = 0 °R	T_{t_1} = 10000 °R
4	4030	4030
5	3380	3380
6	2820	2820
8	2340	2340
10	1840	1840
12	1280	1280
14	700	700

Scramjet equivalence ratio (ϕ) vs. Free-stream Mach number (M_∞)

M_∞	ϕ
4	1.0
5	1.0
6	1.0
8	1.0
10	1.0
12	1.0
14	1.0

Scramjet maximum airflow ratio ($\dot{w}_{RJ_{max}}/\dot{w}_{\substack{\text{full capture}\\ \text{inlet}}}$) vs. inlet flow field total temperature (T_{t_1})

T_{t_1}, °R	($\dot{w}_{RJ_{max}}/\dot{w}_{\substack{\text{full capture}\\ \text{inlet}}}$)
0	1.0
10000	1.0

Scramjet throttling table at cruise conditions (M=14); $(F_N/F_{N_{max}})$ vs. (SFC/SFC_{max})

$(F_N/F_{N_{max}})$	(SFC/SFC_{max})
0	1.0
.3991	.7701
.45	.76
.5	.762
.55	.773
.7	.838
.9	.943
1.0	1.0

3.4 Trajectory Details

Trajectory segment (1) prescribed path follows:

M_∞	Altitude, ft.
.3	2000
.5	3700
.6	4700
.7	5800
.75	6500
.8	7300
.85	8000
.9	8700
.95	9300
1.0	10000
1.1	11700
1.2	13700
1.3	15800
1.4	18000 (q_∞= 1450.9 psf)
1.5	20518 (q_∞ = 1500 psf)

3.5 Aerodynamic Characteristics

Linear aerodynamics are based on the equations listed below.

$$C_D = C_{D_o} + K\,(C_L - C_{L_o})^2$$

$$C_L = C_{L_\alpha}\alpha + (C_{L_{\alpha=0}})$$

M_∞	C_{D_o}	C_{L_o}	$C_{L_{\alpha=0}}$	C_{L_α}	K
0	.016	-.020	-.020	.0450	.347
.52	.016	-.020	-.020	.0450	.347
.68	.016	-.018	-.018	.0455	.347
.80	.0173	-.017	-.017	.0462	.347
1.0	.0263	-.015	-.015	.0473	.358
1.04	.0295	-.014	-.014	.0473	.360
1.12	.0298	-.013	-.013	.0472	.365
1.2	.0255	-.011	-.011	.0464	.372
1.32	.0210	-.010	-.010	.0445	.390
1.48	.0192	-.008	-.008	.0415	.413
2.0	.0170	0.	0.	.0350	.517
2.4	.0147	.005	.005	.0303	.590
2.8	.0132	.008	.008	.0275	.652
4.0	.0093	.010	.010	.0218	.808
5.2	.0064	0.	0.	.0182	.932
6.2	.0050	0.	0.	.0162	1.022
8.0	.0045	-.008	-.008	.0143	1.168
9.2	.0045	-.010	-.010	.0136	1.238
10.8	.0045	-.010	-.010	.0135	1.270
15.0	.0045	-.010	-.010	.0135	1.270

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WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                         01/14/77          10.46.44.         PAGE    1

                     LRC TEST PROBLEM NUMBER 2  -----  WSEG III
                     TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                     IN-FLIGHT ENGINE SCALING REQUESTED


          STCASE/TABSIZ/
                    TABLE SIZES FOR EACH TABLE USED IN THIS RUN
          ATAB46(75)    $ CD0 VS. ALT AND MACH
          ATAB52(50)    $ K21 VS. MACH
          ATAB50(50)    $ MIN DRAG CL VS MACH
          CLATAB(75)    $ LIFT CURVE SLOPE VS. ALT AND MACH
          CLZTAB(75)    $ CL AT ZERO ANGLE OF ATTACK VS. ALT AND MACH
          ETAB03(15)
          ETAB04(25)
          ETAB05(70)
          ETAB06(75)
          ETAB07(10)
          ETAB08(20)
          ETAB09(30)
          ETAB10(10)
          HTAB01(500)
          HTAB02(500)
          END
                    TOTAL TABLE SIZE FOR THIS RUN IS  1609
```

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WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                         01/14/77            10.46.44.          PAGE    2
                           LRC TEST PROBLEM NUMBER 2  -----  WSEG III
                           TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                           IN-FLIGHT ENGINE SCALING REQUESTED


          $TCASE/DATA1/
     ***
     ***
     ***        DATA FOR PRINT-OUT CONTROL
          IPDICN=1.     $ PRINT DATA BASE DIRECTORY
          IPDICN=0.     $ DO NOT PRINT DATA BASE DIRECTORY
     **
     ***      CONTROLS PRINT OUT OF MISSION SEGMENTS
      IPSEG=3,4,5,6,8,9,10,0,
     ***
          IPATMO=1.     $ GENERATE TABULAR LISTING OF ATMOSPHERIC PROPERTIES
          IPATMO=0.     $ DO NOT GENERATE TABULAR LISTING OF ATMOSPHERIC PROPERTIES
          IPTZIN=0.     $ DO NOT PRINT TERM ARRAY AS THE INPUT DATA IS PROCESSED
          IPTZIN=1.     $ PRINT THE TERM ARRAY FROM FILLTZ
         IDBMAP=0.      $DO NOT PRINT DUMPS DURING CLIMB
     *                    AS THE INPUT DATA FOR EACH
     *                    MISSION SEGMENT IS PROCESSED
          IPENDS=0.     $ DO NOT PRINT SCALED ENGINE DATA
          IPENDS=1.     $ PRINT SCALED ENGINE DATA
          IPENDR=0.     $ DO NOT PRINT RAW ENGINE DATA
          IPENDR=1.     $ PRINT RAW ENGINE DATA
          IPTZEV=1.     $ PRINT TERM ARRAY AS EACH MISSION SEGMENT IS STARTED
          IPRGSV=1.,*   $ PRINT THE RG SAVE ARRAY FROM EACH MISSION SEGMENT
     ***
     ***       TAKE-OFF AND LANDING DATA
     ***
       SPLG  =200.0.$   FLAT PLATE AREA OF GEAR (SF)
       CDPLG =0.5,$     FLAT PLATE DRAG COEF OF GEAR
       AG    =.25,$     GROUND ROLL BODY ANGLE (DEG)
       AMAXG =12.0,$    MAXIMUM GROUND ROTATION ANGLE (DEG)
       DFK   =0.189,$   INDUCED DRAG FACTOR
       XMAXG =7500.0,$  MAXIMUM GROUND ROLL (FT) IGNORED, IF ZERO
       BFOREX=0.66,$    FLAP SPAN TO EXPOSED WING SPAN RATIO
       SPCHUT=0.0,$     FLAT PLATE AREA OF DRAG CHUTE (SF)
       CDPCHT=0.0,$     FLAT PLATE DRAG COEFF OF CHUTE
       GRNDFT=0.025,$   GROUND ROLL FRICTION COEFFICIENT TAKE-OFF
       FLAPDT=20.0,$    FLAP DEFLECTION (DEG) TAKE-OFF
       GRNDFL=.35,$     GROUND ROLL FRICTION COEFFICIENT LANDING
       FLAPDL=45.0,$    FLAP DEFLECTION (DEG) LANDING
       FNL   =0.0,$     LANDING THRUST (LB)
     ***   LOW ASPECT RATIO TAKE-OFF VALUES
       CLATOT=0.065,   $TOTAL LIFT CURVE SLOPE (PER DEGREE)
       WINCID=-0.7,  $  WING INCIDENCE AT ZERO ANGLE OF ATTACK
        CL0=0.0,  $LIFT COEF AT ZERO ANGLE OF ATTACK
       ARTHEO=2.0,$     THEORETICAL WING ASPECT RATIO (SPAN**2/SREF)
       AMAXG =20.0,$    MAXIMUM GROUND ROTATION ANGLE (DEG)
       WSLEFC=60.0,$    WING LEADING EDGE SWEEP ANGLE (DEG)
       CFOCAV=.15,$     AVERAGE FLAP CHORD TO WING CHORD RATIO
       CD0   =0.0086, $ DRAG COEFF AT ZERO LIFT
       TRATIO=.20,$     WING TAPER RATIO
     ***
     ***         GENERAL DATA
```

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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77            10.46.45.          PAGE    1
                              LRC TEST PROBLEM NUMBER 2  -----  NSEG III
                              TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                              IN-FLIGHT ENGINE SCALING REQUESTED


          GLEVEL=1.0,
          AVDID1=0,
          AVDID2=0,
      AMTO=.2,
      HTO=50.,
          PSET=1,
          HI=0.0,
          HF=40000.0,
          AMI=0.2,
          AMF=0.825,
          HD=5.0,
          HE=35000.0,
          AMS=0.79,
          AME=0.767,
  ...
  ...
  ...          AERO DATA
        CLMAX=.8,
      RCSC=100.0,
         INDAER = 9,
         CASE = 1,  $SINGLE SYSTEM
         INDA46 = 1,
         INDA52 = 1,
         INDA50 = 1,
         INDCLA = 1,
         INDCLZ = 1,
         IA46Y = 2,
         IA46X = 20,
         ICLZX=20,
         ICLZY = 2 ,
         ICLAX = 20,
         ICLAY = 2,
         ATAB46 = 0.,500000.,   $ ALTITUDES FOR CD0
                  0.,.52,.60,.8,1.,1.04,1.12,1.2,1.32,1.40,2.,2.4,2.8,4., $ MACHS
                  5.2,6.2,8.,9.2,10.0,15.,
                  .016,.016,.016,.016,.016,.016,.0173,.0173,.0263,.0263,
                  .0295,.0295,.0290,.0290,.0255,.0255,.0210,.0210,
                  .0192,.0192,.017,.017,.0147,.0147,.0132,.0132,.0093,.0093,
                  .0064,.0064,.005,.005,.0045,.0045,.0045,.0045,
                  .0045,.0045,.0045,.0045,
  ....CL FOR MIN DRAG VS. MACH
         ATAB50 = 20 ,0.,-.02,.52,-.02,.60,-.010,.8,-.017,1.,-.015,1.04,
                 -.014,1.12,-.013,1.2,-.011,1.32,-.01,1.40,-.008,2.,0.,
                 2.4,.005,2.8,.008,4.,.01,5.2,0.,6.2,0.,8.,-.008,9.2,-.01,
                 10.0,-.01,15.,-.01,
  ....K21 VS. MACH
         ATAB52 = 20 ,0.,.367,.52,.367,.60,.367,.8,.367,1.,.350,
                      1.04,.36,1.12,.365,1.2,.372,1.32,.39,1.40,.413,
                      2.,.517,2.4,.59,2.8,.652,4.,.800,5.2,.932,
                      6.2,1.022,8.,1.160,9.2,1.230,10.0,1.27,15.,1.27,
         CLATAB = 0.,.52,.60,.8,1.,1.04,1.12,1.2,1.32,1.40,2.,2.4,   $MACHS
                  2.8,4.,5.2,6.2,8.,9.2,10.0,15.,
                    LRC TEST PROBLEM NUMBER 2  -----  NSEG III
                    TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                    IN-FLIGHT ENGINE SCALING REQUESTED

               0.,500000.,                             $ALTITUDES
   ...    ALT = 0.
               .045,.045,.0455,.0462,.0473,.0473,.0472,.0464,.0445,
               .0415,.035,.0303,.0275,.0219,.0182,.0162,.0143,
               .0136,.0135,.0135,
   ....   ALT = 500000.
               .045,.045,.0455,.0462,.0473,.0473,.0472,.0464,.0445,
               .0415,.035,.0303,.0275,.0210,.0182,.0162,.0143,
               .0136,.0135,.0135,
         CL2TAB = 0.,.52,.58,.8,1.,1.04,1.12,1.2,1.32,1.49,2.,2.4,   $MACHS
               2.8,4.,5.2,6.2,8.,9.2,10.8,15.,
               0.,500000.,       $ALTITUDES
   ...    ALT = 0.
               -.02,-.02,-.018,-.017,-.015,-.014,-.013,-.011,-.01,
               -.008, 0.,.005,.008,.01,0.,0.,-.008,-.01,-.01,-.01,
   ...    ALT = 500000.
               -.02,-.02,-.018,-.017,-.015,-.014,-.013,-.011,-.01,
               -.008,0.,.005,.008,.01,0.,0.,-.008,-.01,-.01,-.01,
         INDE01 = 0.
         INDE02 = 0.
         INDE03 = 1.
         INDE04 = 1.
         INDE05 = 1.
         INDE06 = 1.
         INDE07 = 1.
         INDE08 = 1.
         INDE09 = 1.
         INDE10 = 1.
         IE03X = 6.
         ETAB03 = 0.,3.99,4.,5.,6.,16.,
               .5645,.5645,.73,.95,1.,1.,
         IE04X = 10.
         ETAB04 = 0.,1.,1.3,1.65,2.,2.4,2.75,3.3,3.9,4.55,
               .95,.95,.944,.920,.907,.872,.837,.772,.680,.59,
         IE05X = 13.
         ETAB05 = 400.,500,449,557.,600.,700.,800.,930.,1000.,1070.,
               1130.,1290.,1340.,1600.,
               429.,429.,418.,390.,367.,307.,266.,246.,230.,219.,
               201.,191.,185.,
         IE06X = 2.
         IE06Z = 10.
         ETAB06 = 0.,5000.,
               -.04561,-.01720,.00346,.06145,.13062,.23249,.33006,
               .45332,.51340,.57626,.70114,.82769,1.14675,1.45332,
               1.40,1.73957,2.00309,2.4,
               72.2,72.2,84.48,84.48,88.45,88.45,97.22,97.22,
               106.19,106.19,116.38,116.38,127.95,127.95,
               144.34,144.34,150.,150.,154.82,154.82,161.47,161.47,
               167.69,167.69,182.86,182.86,190.69,190.69,227.,227.,
               232.71,232.71,238.86,238.86,266.,266.,
         IE07X = 2.
         ETAB07 = 400.,1200.,
                        LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                        TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                        IN-FLIGHT ENGINE SCALING REQUESTED

             .0292,.0292,
      IE08X =  8,
      ETAB08 = 0.,.3991,.45,.5,.55,.7,.9,1.,
             1.,.7701,.76,.762,.773,.838,.943,1.,
      IE09X =  7
      ETAB09 = 4.,5.,6.,8.,10.,12.,14.,
             4030.,3300.,2820.,2340.,1840.,1200.,700.,
             1.,1.,1.,1.,1.,1.,1.,
      IE10X = 2
      ETAB10 = 3.,10000.,
             1.,1.,
...
...        ATMOSPHERIC DATA
        INDATM=9,
        INDATM=3,
...
...                    DATA FOR USER SPECIFIED TEMPERATURE PROFILE
        NHG=11,
        HG=-16404.0, 0.0, 36089.01, 65617.01, 104987.5, 154199.01,
            170604.01, 200131.01, 259186.01, 291160.01, 295276.01,
        TM=577.10, 518.68, 389.98, 389.98, 411.98, 487.18, 487.18,
           454.78, 325.18, 325.18, 379.18,
        PM=3711.0839, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
...
...
...        THRUST DATA
   FF=0.0,      $ FUEL FLOW ADDITIVE FACTOR FOR RESERVES
   FPOL=1.0,
        FFLMIN=0.001,
        SFCFAC=1.05,       $ SFC MULTIPLYER FACTOR
        NUMENG=4,          $ NUMBER OF ENGINES
        TSIZEF=1.0,
        THRMIN=0.1,
...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ..
...                MAX. THRUST  (CASEN = 1)
      INDEB1 = 0,
      INDEB2 = 0,
...     SPECIAL INPUTS FOR DUAL ENGINE OPTION
       THINTJ=0.01,
       THINRJ=0.01,
      DELIN =  6.0 ,
       IPDENG=0,      $NULL DIAGNOSTIC PRINT IN ENGINE ROUTINE
      DELWNG = 0.,
      AMINRJ=3.99,         $ MINIMUM RAMJET OPERATING MACH NUMBER
      AMAXTJ = 4.0,        $ MAXIMUM TURBOJET OPERATING MACH NUMBER
      SREF = 10000.,       $ WING AREA FOR TAKEOFF AND LANDING
      YDSW = 10000.,       $ IN-FLIGHT WING AREA
        BAREWT=3**100.0,   $ AIRCRAFT BARE WEIGHT
        OWE=200000.,     $ OVERALL WEIGHT EMPTY
      PLWINT = 0.,   $ INTERNAL PAYLOAD WEIGHT
      AMLIM = 14.5,      $ MAXIMUM MACH NUMBER PLACARD
      QLIM = 2000.,        $ MAXIMUM DYNAMIC PRESSURE PLACARD
```

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HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/14/77            10.46.49.          PAGE    6
                          LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                          TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                          IN-FLIGHT ENGINE SCALING REQUESTED

       CLMAX=1.0,  $MAX LIFT COEFFICIENT
       CLC=.09,   $CRUISE LIFT COEFFICIENT FOR RAMJET SCALING
       BAREWT = 200000.,
       WT = 700000.,
       WGTO = 700000.,
       WL = 200000.,
       WO = 700000.,
       AINLET = 70.26,  $FT**2
        ALPLIM=65.0,      $ MAXIMUM ANGLE OF ATTACK IN DUAL ENGINE OPTION
      ICOP=2,  $  COMBINATION ENGINE OPTION--RAMJET AND TURBOJET
        IASCAL=1,  $AUTOMATICALLY SCALE ENGINES DURING CLIMB
         END
```

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                                        LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                        TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                        IN-FLIGHT ENGINE SCALING REQUESTED

....  TEST PROBLEM 2 -- HSEG III
....
    SEGMENT(2),OPTION(21)
...   ENGINE SCALING OPTION
    PROPULSIVE MODE = DUAL
    SCALE TURBOJET -- SEALEVEL CORRECTED AIRFLOW = 1116.46, (LB/SEC)
    CRUISE MACH = 14.,  CRUISE ALTITUDE=116978.,
     AERO OPTION=1,
    END     .
  1.0000     0.           14.000      1116.5      .11698E+06      91000 0.                  21 0.         1111111111
...
....
    SEGMENT(3),OPTION(13)
    NEW MACH = .3,
    NEW ALTITUDE = 2000.,
    END
  .30000      2000.0     0.          0.          0.               91000 0.                  13 0.         1111111111
....
    SEGMENT(4),OPTION(1)
    FLY LINEAR MACH-ALTITUDE PATH
    END MACH NUMBER = .6,
    END ALTITUDE = 4700.,
    PROPULSIVE MODE = DUAL
    THRUST = MAXIMUM AVAILABLE
    END
  .60000      4700.0     0.          4.0000      0.               91100 0.                   1 0.         1111111111
....
    SEGMENT(5),OPTION(1)
    FLY LINEAR MACH-ALTITUDE PATH
    END MACH NUMBER = 1.0,
    END ALTITUDE = 10000.,
    PROPULSIVE MODE = DUAL
    THRUST = MAXIMUM AVAILABLE
    END
  1.0000      10000.     0.          4.0000      0.               91100 0.                   1 0.         1111111111
....
    SEGMENT(6),OPTION(1)
    FLY LINEAR MACH-ALTITUDE PATH
    END MACH NUMBER = 1.5,
    END ALTITUDE = 20510.,
    THRUST = MAXIMUM AVAILABLE
    PROPULSIVE MODE = DUAL
    END
  1.5000      20510.     0.          4.0000      0.               91100 0.                   1 0.         1111111111
     SEGMENT(7),OPTION(22),
..... LOOP BACK TO USE SCALED UP ENGINE
     START LOOP AT BEGINNING OF SEGMENT(3)
     FINISH LOOP AT END OF SEGMENT(6)
     NUMBER OF ITERATIONS=1.,
     END
 3.         0.         0.          3.0000      6.0000           91100 0.                  22  1.0000     1111111111
.....
```

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     HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.46.51.          PAGE   13

                                           LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                           TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                           IN-FLIGHT ENGINE SCALING REQUESTED


****
    SEGMENT(8),OPTION(1)
    FLY CONSTANT Q PATH
    END MACH NUMBER = 6.256,
    END MACH NUMBER = 8.5,
    END ALTITUDE = 92000..
    END MACH NUMBER = 14..
    END ALTITUDE = 116970..
    THRUST = MAXIMUM AVAILABLE
    PROPULSIVE MODE = DUAL
    END
  14.000     .11697E+06 0.         5.0000     0.               91100 0.                   1 0.          1111111111
****
   SEGMENT(9),OPTION(6).
     NUMBER OF INTEGRATION STEPS = 10.
   END WEIGHT =200000.. POUNDS
   CRUISE AT CONSTANT LIFT COEFFICIENT
    THRUST = THRUST REQUIRED
    PROPULSIVE MODE = DUAL
    END
 0.          0.          .20000E+06 0.          0.               91010  1.0000              6 0.          1111111111
****
      SEGMENT(10), OPTION(1)
   USE MAX L/D AS BASIS FOR SELECTION
   SEARCH AT CONSTANT SPECIFIC ENERGY
    PROPULSIVE MODE = DUAL
     THRUST = MINIMUM ALLOWABLE
    END MACH = .3,
    END ALTITUDE = 2000..
      END MISSION
  .30000     2000.0      3.0000     1.0000     0.               91210 0.                   1 0.          1111111111




    HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.46.51.          PAGE   14

                                           LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                           TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                           IN-FLIGHT ENGINE SCALING REQUESTED


                        RUN

END OF HSEGII INPUT FOR CURRENT CASE.  0 INPUT ERRORS DETECTED.
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                 TURBOJET PERFORMANCE (PER ENGINE) AT SEA LEVEL STATIC CONDITIONS

     TURBOJET GROSS THRUST - - - - - - - - - - -   87305.4      (LB)
     NET THRUST IN FREESTREAM DIRECTION  - - -   87305.4      (LB)
     AIRFLOW RATE  - - - - - - - - - - - - - -   1060.64      (LB/SEC)
     FUELFLOW RATE - - - - - - - - - - - - - -   30.9706      (LB/SEC)
     SPECIFIC FUEL CONSUMPTION - - - - - - - -   1.27706      (LB FUEL/HR)/LB THRUST)
     BASE ENGINE SCALING FACTOR  - - - - - - -   2.62696      (ND UNITS)
     MAXIMUM AIRFLOW RATE OF BASE ENGINE - - -   425.000      (LB/SEC)
     PRESSURE RATIO (PT3/PN0) - - - - - - - - -   .950000      (ND UNITS)
     ANGLE OF ATTACK - - - - - - - - - - - - - 0.                (DEGREES)
     WING HALF ANGLE- - - - - - - - - - - - - - 0.                (DEGREES)
     INLET WEDGE ANGLE- - - - - - - - - - - - -  6.00000      (DEGREES)
     SCALING CORRECTED AIRFLOW RATE - - - - - -  1116.46      (LB/SEC)
     LIFT COMPONENT OF ENGINE FORCES - - - - - 0.                (LB)

      ENGINE SCALING COMPLETED

  7. ****** SELECT END    OPTION  21 ******
                   WT    =   .70000E+06     H     =   50.000         AM    =   .20000

                   TIME  =  0.              RANGE =  0.              FUEL  =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    4.2030          CPU TIME USED IN PREVIOUS TASK =   4.2030

 RGSAVE
ITZ          WT           H          AM      TOC***       FUEL       RUN***       XNZI   CL0   CL1 OPTION
 11   .7000E+06   50.00       .2000     0.          0.          0.          1.000       -0.    0.    21

UNPACK        21    51000         5        1        0        0      0.       13
  .30000      2000.0    0.          0.        0.              51000 0.                 13 0.         1111111111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77             10.47.00.          PAGE   17

                                          LRC TEST PROBLEM NUMBER 2  ------  NSEG III
                                          TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                          IN-FLIGHT ENGINE SCALING REQUESTED


                                              LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME         RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.    V (KNOTS)    GAMTD         NET THRUST       SFC

    0.000   0.                700000.    0.                2000.          .300         197.          5.71   319154.6         1.3776

     .066    .22225           699513.     486.8            2135.          .315         207.          5.82   319754.4         1.3750

     .127    .47592           699066.     933.8            2270.          .330         216.          6.01   320922.4         1.3719

     .184    .66799           698650.    1350.             2405.          .345         226.          6.14   321993.7         1.3687

     .238    .86853           698257.    1743.             2540.          .360         236.          6.23   322995.2         1.3660

     .288   1.0518            697883.    2117.             2675.          .375         246.          6.27   323909.9         1.3637

     .337   1.2525            697525.    2475.             2810.          .390         255.          6.29   325015.1         1.3615

     .384   1.4538            697181.    2819.             2945.          .405         265.          6.29   326102.2         1.3591

     .429   1.6556            696847.    3153.             3080.          .420         275.          6.27   327326.6         1.3567

     .472   1.8582            696523.    3477.             3215.          .435         284.          6.23   328655.7         1.3543

     .515   2.0620            696207.    3793.             3350.          .450         294.          6.19   330079.0         1.3517

     .557   2.2675            695898.    4102.             3485.          .465         304.          6.14   331605.4         1.3490

     .597   2.4767            695595.    4405.             3620.          .480         313.          6.09   333237.4         1.3461

     .637   2.6848            695298.    4702.             3755.          .495         323.          6.03   334986.9         1.3431

     .676   2.8954            695006.    4994.             3890.          .510         333.          5.96   336802.2         1.3398

     .714   3.1092            694718.    5282.             4025.          .525         342.          5.90   338850.2         1.3364

     .751   3.3255            694433.    5567.             4160.          .540         352.          5.82   340961.9         1.3343

     .789   3.5448            694152.    5848.             4295.          .555         361.          5.74   342853.9         1.3332

     .825   3.7673            693873.    6127.             4430.          .570         371.          5.66   343690.8         1.3320

     .861   3.9935            693596.    6404.             4565.          .585         381.          5.58   345493.3         1.3309

     .897   4.2220            693321.    6679.             4700.          .600         390.          5.54   347309.1         1.3288
  4. ****** XCLECT END     OPTION   1 ******
                             WT     =   .69332E+06      H     =   4700.0         AM    =   .60000

                             TIME   =  0.              RANGE =  0.              FUEL  =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   5.3210          CPU TIME USED IN PREVIOUS TASK =   1.0940

 MCSAVE
ITZ          WT              H          AM       TAC***         FUEL      RUN***          XNZZ   E10   E11 OPTION
 31   .6933E+06   4700.         .6000        .1495E-01   6679.        4.222         1.000        -0.    0.     1


UNPACK        41     51100          5          1          1          0          0.         1
  1.0000      10000.     0.           4.0000     0.                51100 0.                      1 0.           1111111111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                 01/14/77            10.47.02.          PAGE   10

                                                   LRC TEST PROBLEM NUMBER 2  -----  NSEG III
                                                   TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                                   IN-FLIGHT ENGINE SCALING REQUESTED


                                                        LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE         WEIGHT      FUEL          ALTITUDE     MACH NO.     V (KNOTS)   GAMTD         NET THRUST        SFC

    0.000  0.                693321.  0.                4700.         .600          390.         7.11  347610.7          1.3207

     .053   .34942           692911.   410.7            4965.         .620          403.         7.04  349199.7          1.3263

     .106   .70553           692504.   817.6            5230.         .640          415.         6.91  351299.0          1.3233

     .158   1.0683           692100.   1221.            5495.         .660          428.         6.79  353536.9          1.3200

     .209   1.4377           691699.   1622.            5760.         .680          441.         6.66  355953.0          1.3165

     .260   1.8149           691300.   2021.            6025.         .700          453.         6.52  358621.2          1.3125

     .311   2.2009           690901.   2420.            6290.         .720          466.         6.37  361519.7          1.3082

     .362   2.5959           690502.   2819.            6555.         .740          478.         6.22  364592.0          1.3037

     .412   3.0083           690102.   3220.            6820.         .760          490.         6.08  367741.7          1.2994

     .462   3.4144           689700.   3621.            7085.         .780          503.         5.94  370966.0          1.2952

     .513   3.8307           689296.   4025.            7350.         .800          515.         5.76  374396.0          1.2907

     .563   4.2785           688885.   4436.            7615.         .820          528.         5.52  378175.7          1.2858

     .616   4.7487           688461.   4860.            7880.         .840          540.         5.25  382964.1          1.2808

     .669   5.2779           688022.   5299.            8145.         .860          552.         4.97  386114.0          1.2754

     .725   5.7431           687564.   5757.            8410.         .880          565.         4.70  390367.9          1.2699

     .783   6.2901           687086.   6235.            8675.         .900          577.         4.42  394095.5          1.2641

     .843   6.8732           686584.   6737.            8940.         .920          589.         4.13  399590.0          1.2582

     .906   7.4976           686053.   7268.            9205.         .940          601.         3.85  404950.2          1.2520

     .972   8.1700           685489.   7832.            9470.         .960          614.         3.57  409690.9          1.2456

    1.043   8.8986           684886.   8435.            9735.         .980          626.         3.28  415103.7          1.2390

    1.119   9.6938           684235.   9086.           10000.        1.000          638.         3.14  420716.2          1.2322
 5, ****** XCLECT END    OPTION   1 ******
                    WT    =   .68424E+06     H     =   10000.          AM    =  1.00000

                    TIME  =   .14954E-01     RANGE =   4.2220          FUEL  =   6670.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   6.4430          CPU TIME USED IN PREVIOUS TASK =   1.1220

 RGSAVE
ITZ           WT            H          AM       TAC***         FUEL       RUN***         XNZZ   E10   E11 OPTION
 41    .6842E+06    .1000E+05  1.0000        .1004E-01   9086.        9.694         1.000       -0.    0.     1


UNPACK        51     51100         5          1          1          0         0.         1
  1.5000      20510.     0.           4.0000      0.                    51100 0.                    1 0.          1111111111
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    NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                     01/14/77            10.47.04.          PAGE   19

                                                 LRC TEST PROBLEM NUMBER 2  ------  NSEG III
                                                 TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                                 IN-FLIGHT ENGINE SCALING REQUESTED


                                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT       FUEL         ALTITUDE    MACH NO.    V (KNOTS)   GAMTD        NET THRUST        SFC

     0.000   0.                684235.   0.               10000.         1.000          630.          3.41   420720.7         1.2322

      .135    1.4513           683065.    1170.           10526.         1.025          653.          2.74   406120.6         1.2819

      .353    3.9498           681169.   3066.            11052.         1.050          667.          1.64   391950.1         1.3348

      .718    7.9494           677985.   6250.            11578.         1.075          682.           .83   378256.8         1.3883

     1.681    19.836           669529.   .1471E+05        12104.         1.100          696.           .57   365002.1         1.4458

     2.298    26.275           664088.   .2015E+05        12629.         1.125          711.           .36   373625.3         1.4109

    11.826    140.48           579686.   .1045E+06        13155.         1.150          725.          1.27   367803.3         1.5388

    11.993    142.46           578115.   .1061E+06        13681.         1.175          739.          1.05   377828.5         1.5573

    12.325    146.59           574851.   .1094E+06        14207.         1.200          754.          1.12   364341.2         1.6230

    12.704    151.39           571107.   .1131E+06        14733.         1.225          768.           .94   352452.7         1.6864

    13.157    157.25           566604.   .1176E+06        15259.         1.250          782.           .78   341529.6         1.7486

    13.678    164.10           561483.   .1228E+06        15785.         1.275          796.           .70   332105.0         1.8073

    14.227    171.44           555982.   .1283E+06        16311.         1.300          810.           .04   323090.5         1.8627

    14.592    176.40           552228.   .1320E+06        16837.         1.325          824.          2.78   411705.5         1.4722

    14.671    177.48           551425.   .1328E+06        17363.         1.350          837.          4.97   441832.1         1.3792

    14.736    178.40           550796.   .1335E+06        17888.         1.375          851.          5.61   459959.2         1.3311

    14.796    179.25           550150.   .1341E+06        18414.         1.400          865.          6.07   473315.1         1.2991

    14.858    180.03           549591.   .1346E+06        18940.         1.425          879.          6.40   485685.2         1.2722

    14.901    180.77           549071.   .1352E+06        19466.         1.450          892.          6.85   497889.9         1.2489

    14.948    181.47           548581.   .1357E+06        19992.         1.475          906.          7.16   506674.8         1.2318

    14.993    182.15           548114.   .1361E+06        20518.         1.500          919.          7.29   519090.7         1.2169
  6. ****** XCLECT END     OPTION    1 ******
                        WT     =   .54811E+06      H      =    20518.         AM     =    1.5000

                        TIME   =   .33597E-01      RANGE  =    13.916         FUEL   =    9886.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    8.1610           CPU TIME USED IN PREVIOUS TASK =    1.7100

 RGSAVE
ITZ           WT              H             AM        TAC***         FUEL        RUN***         XNZZ    E10    E11 OPTION
 51   .5481E+06    .2052E+05    1.500         .2499         .1361E+06    182.1         1.000        -0.     0.      1


UNPACK        61      51100          5           1          1          0          0.         22
 0.           0.           0.              3.0000      6.0000            51100 0.                    22  1.0000      1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77           10.47.07.          PAGE   22

                                          LRC TEST PROBLEM NUMBER 2  -----  NSEG III
                                          TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                          IN-FLIGHT ENGINE SCALING REQUESTED


                                              LINEAR MACH ALTITUDE CLIMB PATH HISTORY

TIME          RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAMTD         NET THRUST        SFC

   0.000    0.                700000.    0.                2000.          .300          197.           6.87   350974.1        1.3776

    .055     .18418           699555.     444.7            2135.          .315          207.           6.97   351670.2        1.3757

    .107     .36311           699143.     857.2            2270.          .330          216.           7.14   352960.4        1.3718

    .154     .53874           698755.    1245.             2405.          .345          226.           7.24   354121.3        1.3686

    .200     .71245           698388.    1612.             2540.          .360          236.           7.30   355217.1        1.3660

    .243     .88525           698036.    1964.             2675.          .375          246.           7.33   356307.0        1.3636

    .285    1.0579            697698.    2302.             2810.          .390          255.           7.32   357432.5        1.3614

    .325    1.2309            697372.    2628.             2945.          .405          265.           7.30   358625.7        1.3590

    .364    1.4047            697055.    2945.             3080.          .420          275.           7.26   359970.5        1.3567

    .402    1.5795            696747.    3253.             3215.          .435          284.           7.21   361430.6        1.3542

    .439    1.7558            696446.    3554.             3350.          .450          294.           7.15   362995.5        1.3517

    .475    1.9336            696151.    3849.             3485.          .465          304.           7.08   364672.2        1.3490

    .510    2.1132            695862.    4138.             3620.          .480          313.           7.01   366466.0        1.3461

    .544    2.2947            695578.    4422.             3755.          .495          323.           6.94   368389.3        1.3431

    .578    2.4781            695299.    4701.             3890.          .510          333.           6.86   370472.9        1.3398

    .612    2.6637            695023.    4977.             4025.          .525          342.           6.78   372645.4        1.3363

    .644    2.8514            694752.    5248.             4160.          .540          352.           6.70   374918.5        1.3343

    .676    3.0418            694482.    5518.             4295.          .555          361.           6.60   376150.9        1.3332

    .708    3.2350            694216.    5784.             4430.          .570          371.           6.51   377967.5        1.3320

    .740    3.4309            693951.    6049.             4565.          .585          381.           6.42   379940.6        1.3305

    .771    3.6296            693688.    6312.             4700.          .600          390.           6.33   382028.0        1.3288
  9. ****** KCLECT END     OPTION    1 ******
                            WT     =   .69369E+06      H      =   4700.0          AM     =   .60000

                            TIME   =  0.               RANGE  =  0.               FUEL   =  0.
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    9.3930           CPU TIME USED IN PREVIOUS TASK =   1.1220

 RGSAVE
ITZ          WT             H              AM       TAC***          FUEL        RUN***          XNZZ   E10    E11 OPTION
 31    .6937E+06    4700.         .6000         .1285E-01    6312.          3.630         1.000         -0.     0.      1


UNPACK          41     51100           5            1          1          0          0.          1
  1.0000       10000.     0.              4.0000      0.                    51100 0.                    1 0.           1111111111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                 01/14/77              10.47.09.            PAGE   23

                                              LRC TEST PROBLEM NUMBER 2  ------  NSEG III
                                              TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                              IN-FLIGHT ENGINE SCALING REQUESTED


                                                  LINEAR MACH ALTITUDE CLIMB PATH HISTORY
  TIME          RANGE          WEIGHT        FUEL          ALTITUDE       MACH NO.     V (KNOTS)     GAMPD          NET THRUST         SFC

      0.000   0.                  693688.    0.                  4700.            .600            390.          8.19    382046.6         1.3287

       .046    .30260             693296.     392.2              4965.            .620            403.          8.12    384817.5         1.3263

       .092    .61095             692900.     788.5              5230.            .640            415.          7.98    388326.6         1.3232

       .137    .92473             692523.    1165.               5495.            .660            428.          7.84    388786.4         1.3208

       .182    1.2440             692141.    1547.               5760.            .680            441.          7.70    391444.0         1.3164

       .226    1.5696             691762.    1927.               6025.            .700            453.          7.55    394377.1         1.3125

      ..269    1.9021             691383.    2306.               6290.            .720            466.          7.39    397564.4         1.3082

       .313    2.2418             691004.    2684.               6555.            .740            478.          7.24    400942.0         1.3037

       .356    2.5887             690626.    3062.               6820.            .760            490.          7.08    404486.4         1.2994

       .399    2.9432             690247.    3441.               7085.            .780            503.          6.93    407952.9         1.2952

       .442    3.3055             689867.    3821.               7350.            .800            515.          6.75    411723.0         1.2907

       .486    3.6793             689482.    4206.               7615.            .820            528.          6.51    415883.2         1.2858

       .530    4.0697             689088.    4600.               7880.            .840            540.          6.23    420046.2         1.2808

       .575    4.4708             688682.    5006.               8145.            .860            552.          5.95    424610.6         1.2754

       .621    4.9061             688263.    5425.               8410.            .880            565.          5.67    429287.7         1.2699

       .669    5.3562             687830.    5858.               8675.            .900            577.          5.39    434266.6         1.2641

       .718    5.8306             687388.    6300.               8940.            .920            589.          5.11    439437.0         1.2582

       .769    6.3323             686910.    6778.               9205.            .940            601.          4.82    444892.5         1.2520

       .821    6.8646             686419.    7269.               9470.            .960            614.          4.54    450536.9         1.2456

       .876    7.4316             685902.    7786.               9735.            .980            626.          4.25    456489.2         1.2390

       .934    8.0300             685355.    8333.              10000.           1.000            638.          4.11    462861.2         1.2322

 10. ****** SELECT END    OPTION   1 ******
                       WT     =   .68536E+06     H      =   10000.          AM     =  1.00000

                       TIME   =   .12049E-01     RANGE  =   8.0296          FUEL   =   6311.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    10.919            CPU TIME USED IN PREVIOUS TASK =    1.1220

 RGSAVE
ITZ         WT             H              AM        TAC***        FUEL       RUN***          XMZZ    E10    E11 OPTION
 41   .6854E+06    .1000E+05  1.0000        .1997E-01    8333.        0.030          1.000         -0.     0.      1


UNPACK         91      91100           9          1         1         0         0.          1
  1.5000      20510.      9.             4.0000     0.                  91100 0.                        1 0.           1111111111
```

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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                    01/14/77          10.47.11.         PAGE   26

                                   LRC TEST PROBLEM NUMBER 2  -----  NSEG III
                                   TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                   IN-FLIGHT ENGINE SCALING REQUESTED


                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST      SFC

    0.000   0.              685355.   0.             10000.        1.000          638.        4.79  462665.7       1.2322

     .096    1.0313         684439.    916.1         10526.        1.025          653.        4.14  449247.1       1.2744

     .226    2.4545         683200.   2155.          11052.        1.050          667.        3.06  436240.2       1.3100

     .393    4.1209         681597.   3758.          11578.        1.075          682.        2.38  423721.0       1.3629

     .614    6.4718         679461.   5895.          12104.        1.100          696.        1.96  411639.0       1.4098

     .828    9.3732         677390.   7965.          12629.        1.125          711.        1.73  401632.0       1.3834

    1.108   12.738          674650.   .1070E+05      13155.        1.150          725.        1.38  397356.1       1.4739

    1.473   17.178          671092.   .1426E+05      13681.        1.175          739.        1.02  379343.1       1.5513

    1.901   22.989          666878.   .1848E+05      14207.        1.200          754.         .84  364640.6       1.6219

    2.418   29.862          661778.   .2358E+05      14733.        1.225          768.         .67  351806.9       1.6097

    3.085   37.671          655150.   .3021E+05      15259.        1.250          782.         .52  340877.6       1.7563

    3.914   48.578          646871.   .3848E+05      15785.        1.275          796.         .43  329901.4       1.8191

    4.832   60.864          637660.   .4770E+05      16311.        1.300          810.         .51  321233.2       1.8703

    5.426   68.938          631676.   .5368E+05      16837.        1.325          824.        2.12  390614.0       1.5218

    5.525   70.296          630673.   .5468E+05      17363.        1.350          837.        4.67  435439.3       1.3998

    5.605   71.417          629860.   .5550E+05      17888.        1.375          851.        4.84  454788.3       1.3467

    5.676   72.431          629132.   .5622E+05      18414.        1.400          865.        5.07  468846.2       1.3124

    5.741   73.371          628465.   .5689E+05      18940.        1.425          879.        5.44  481396.6       1.2838

    5.801   74.251          627846.   .5751E+05      19466.        1.450          892.        5.77  492994.2       1.2594

    5.857   75.083          627266.   .5809E+05      19992.        1.475          906.        6.05  502053.3       1.2406

    5.910   75.884          626714.   .5864E+05      20518.        1.500          919.        6.17  511451.2       1.2259

 11. ****** KCLECT END     OPTION    1 ******
                       WT     =   .62671E+06     H     =   20518.          AM    =   1.5000

                       TIME   =   .98510E-01     RANGE =   11.660          FUEL  =   8332.7

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    12.187           CPU TIME USED IN PREVIOUS TASK =   1.6728

  RGSAVE
ITZ         WT             H            AM        TAC***         FUEL       RUN***         XNZZ   E10    E11 OPTION
 51   .6267E+06   .2052E+05   1.500          .9850E-01   .5864E+05   75.88          1.000        -0.    0.     1


UNPACK          61       51100           5           1           1           0         0.          22
 0.           0.           0.           3.0000      6.0000              51100 0.                     22  1.0000      1111111111
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HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                               01/14/77            10.47.15.          PAGE   25

                                        LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                        TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                        IN-FLIGHT ENGINE SCALING REQUESTED


                                          CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

  TIME          RANGE         WEIGHT       FUEL          ALTITUDE    MACH NO.    V (KNOTS)    GAMMD         NET THRUST       SFC

     0.000    0.                 626714.    0.              20510.        1.500         919.        11.03   511440.0        1.2250

      .244    3.7066             624203.    2512.           25341.        1.632         900.        11.15   510996.2        1.1694

      .501    8.0984             621620.    5087.           30164.        1.818        1078.        10.95   542620.4        1.1114

      .731    12.384             619206.    7429.           34907.        2.034        1172.        10.13   576127.3        1.0677

      .963    16.987             616693.    9021.           39018.        2.204        1309.         8.91   591175.3        1.0425

     1.204    22.404             614415.    .1230E+05       44633.        2.564        1470.         7.88   600696.7        1.0250

     1.444    28.604             611952.    .1476E+05       49456.        2.879        1650.         7.69   614970.0        1.0070

     1.641    34.248             609076.    .1604E+05       54279.        3.233        1853.         7.95   790060.7         .81676

     1.819    39.978             607070.    .1804E+05       59182.        3.638        2081.         7.13   820370.0         .85323

     2.014    47.088             605594.    .2112E+05       63925.        4.077        2337.         5.10   533000.0         .93729

     2.292    58.433             602779.    .2394E+05       68768.        4.577        2629.         3.53   631467.9         .98044

     2.614    73.288             599623.    .2729E+05       73571.        5.136        2960.         2.67   574695.5        1.0097

     2.998    93.219             595380.    .3133E+05       78394.        5.750        3330.         2.08   526322.6        1.2065

     3.453    119.76             590490.    .3622E+05       83217.        6.451        3743.         1.49   494535.6        1.3104

     3.998    155.46             584782.    .4201E+05       88040.        7.222        4204.         1.08   445391.9        1.4090

     4.689    206.43             577587.    .4913E+05       92863.        8.078        4718.          .75   399263.0        1.5304

     5.591    281.88             568600.    .5811E+05       97686.        9.038        5292.          .50   346351.5        1.6990

     6.838    395.89             556771.    .6994E+05      102509.       10.087        5938.          .31   288376.1        1.9359

     8.699    590.24             540081.    .8671E+05      107332.       11.260        6641.          .18   224245.2        2.3371

    12.023    977.63             512192.    .1145E+06      112155.       12.560        7431.          .07   199551.0        3.0910

    22.639    2371.0             430900.    .1950E+06      116978.       14.000        8310.          .03   94551.41        4.6746

 13. ****** HCLECT END     OPTION   1 ******
                     WT     =   .43091E+06      H      =   .11698E+06      AM     =   14.000

                     TIME   =   .12692          RANGE  =   87.551          FUEL   =   58641.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    14.595          CPU TIME USED IN PREVIOUS TASK =   2.3020

 RGSAVE
ITZ          WT             H              AM        TAC***         FUEL        RUN***          XNZZ    I10   I11 OPTION
 71   .4309E+06   .1170E+06   14.00        .3773        .1950E+06   2371.         1.000         -0.     0.     1


UNPACK        81      51010          5         1         0         10         10.        6
 0.           0.            .20000E+06 0.          0.               51010  1.0000               6 0.           111111111
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     HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77           10.47.22.         PAGE   26
                                                 LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                                 TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                                 IN-FLIGHT ENGINE SCALING REQUESTED

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                           CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMTD          NET THRUST         SFC

    0.000    0.                200000.   0.             116970.         9.530         5661.            .52  -22347.67       -.10715

     .417     38.771           199984.    15.87         119119.         9.256         5502.            .18  -20370.46       -.10959

     .892     81.716           199967.    33.36         117663.         9.002         5345.           -.14  -21172.47       -.10917

    1.396    125.79            199948.    51.98         117022.         8.723         5181.            .04  -19829.62       -.10860

    1.935    171.69            199930.    70.43         116881.         8.436         5010.            .04  -19081.63       -.10841

    2.517    219.47            199910.    89.93         116284.         8.130         4836.            .04  -18376.77       -.10904

    3.147    269.23            199890.    110.1         116635.         7.829         4651.           -.17  -17675.79       -.10578

    3.818    319.62            199869.    130.9         116481.         7.520         4467.           -.10  -17920.73       -.10863

    4.541    372.08            199847.    153.4         116912.         7.193         4268.            .02  -15842.53       -.11159

    5.344    428.55            199823.    176.7         116842.         6.842         4060.            .02  -14971.62       -.11123

    6.229    486.76            199799.    200.9         116794.         6.471         3841.            .03  -14280.76       -.11004

    7.199    546.97            199774.    225.7         116976.         6.078         3608.            .03  -13549.61       -.10773

    8.233    608.94            199749.    250.5         117196.         5.650         3359.           -.37  -12986.50       -.10643

    9.098    653.53            199729.    270.8         113372.         5.242         3104.           -.41  -13719.39       -.10919

   10.205    712.48            199702.    298.3         113030.         4.752         2813.           -.94  -11373.93       -.11240

   11.462    764.95            199675.    325.0         107367.         4.268         2512.           -.13  -11753.92       -.11939

   12.854    818.99            199654.    346.5         111697.         3.908         2317.           -.49  -10950.03       -.49504E-01

   14.468    879.61            199639.    361.0         102214.         2.931         1723.          -1.96  -12320.21       -.42179E-01

   16.465    920.22            199623.    377.3          98664.         2.098         1224.          -3.46  -13842.00       -.32909E-01

   19.698    966.39            199598.    402.3          67499.          .939          539.          -6.33   362.4958       1.2039

   34.222    1043.2            199030.    970.1           2413.          .262          172.         -15.50   3517.457       1.3369

   34.313    1043.3            198998.    1002.           2000.          .300          197.         -23.05   34092.77       1.2728
 15. ****** SELECT END     OPTION    1 ******
                          WT      =   .19900E+06      H      =    2000.0          AM     =   .30000

                          TIME    =   1.6071          RANGE  =   10450.          FUEL   =   .23091E+06

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   20.621           CPU TIME USED IN PREVIOUS TASK =   5.0020

 OGSAVE
ITZ          WT               H          AM       TAC***          FUEL       RUN***        XNZZ   E10   E11 OPTION
 91   .1990E+06   2000.        .3000        .5719        1002.       1043.        1.000       -0.    0.      1
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HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77           10.47.23.          PAGE   20
                                         LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                         TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                         IN-FLIGHT ENGINE SCALING REQUESTED


                               MISSION TIME HISTORY                     PAYLOAD =      0.

                               *******INCREMENTAL********     ***********TOTAL***********-
WEIGHT    MACH    ALTITUDE   RANGE    TIME(HRS)   FUEL      RANGE   TIME(HRS)   FUEL        OPTION

700000.   .300       2000.     0.00     0.000        0.         0.     0.00        0.       13

693688.   .600       4700.     3.63      .013     6312.         4.      .01     6312.        1

685355.  1.000      10090.     8.04      .016     8333.        12.      .03    14645.        1

626714.  1.500      20510.    76.60      .099    58641.        88.      .13    73286.        1

430908. 14.000     116970.  2370.96      .377   195806.      2459.      .50   269092.        1

200000.  9.530     116970.  7999.06     1.103   230908.     10458.     1.60   500000.        6

198998.   .300       2000.  1043.31      .572     1002.     11502.     2.26   501002.        1
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HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77           10.47.28.          PAGE   19
                                         LRC TEST PROBLEM NUMBER 2  -----  HSEG III
                                         TOTAL RANGE TO BE DETERMINED -- NO ITERATION REQUIRED
                                         IN-FLIGHT ENGINE SCALING REQUESTED



                    END OF FILE READING DATA
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01/14/77  LRC ICOPS INDEPNDT 6600C-131K 01/21/75F
10.42.58. ACCT - RATE IS EXCEEDED
10.42.59.GT74100.
10.42.59.                          LRC COMPUTER COMPLEX
10.42.59.JOB,01,200,110000,5000.           A4916   R
10.42.59.4322        100732        BLDG 1247A  CENT
10.42.59.USER.VAHL, WALTER A                  0089
10.42.59.10600W 37390
10.42.59.FETCH,A4916,,BINARY,,MISSION.
10.43.06.TIME        DG ATTACH
10.46.20.TIME        ED ATTACH
10.46.29.END    FETCH
10.46.29.DROPFIL.DCMS.ZOOKS,ZOUNDS.DAFILE.SCFILE.
10.46.34.MODEL.
10.46.34.MISSION.
10.47.30.STOP 77
10.47.30.REWIND(INPUT)
10.47.31.COPYCR(INPUT,DUMMY)
10.47.33.REWIND(DUMMY)
10.47.35.COPYSBF(DUMMY,OUTPUT)
10.47.36.COPYSBF(INPUT,OUTPUT)
10.47.39.SPPRINT(OUTPUT,3)
10.47.41.      0000230 O/S CALLS
10.47.41.CPU     20.980674 SEC.
10.47.41.PPU   265.322496 SEC.
10.47.^1.CRU      7          RESOURCE UNITS
10.47.41.KWH      1.00       KILOWORD HOURS
11.13.27. GT74100.   1706 LINES PRINTED. LRJ!
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4.0 PROBLEM NO. 3 - MACH 6 HYDROGEN FUELLED TURBORAMJET WITH ENGINE SCALING

4.1 Vehicle Characteristics

Turbojet propulsion (M = 0-.8)

Dual mode (turbojet and ramjet) propulsion (M = .8-3)

Ramjet propulsion (M = 3-6)

4 turboramjet engines, H_2 fuel (F/A = .0292)

$M_{cruise} = 6$

Gross take-off weight to be determined

Operating weight empty = 494,960 pounds

Thrust loading = .4

Thrust margin at cruise = .4

Vehicle reference area - 14,724 ft^2

Wing semi-thickness angle = -.7°

Inlet initial wedge angle = 6°

Engine exhaust field pressure (p_N) = free-stream static pressure (p_∞)

Total range = 7350 N.M. (not counting alternate field range)

4.2 Mission Characteristics

(1) Take-off to clear 50 foot obstacle

(2) Accelerating climb at max. power along prescribed path until q = 1000 psf reached ($\approx$M = 2.5)

(3) Accelerating climb at max. power along constant q = 1000 psf path to M = 5.95 (altitude = 87990 ft.)

(4) Accelerating climb at full power to M = 6, altitude = 99,120 ft.

(5) Constant altitude, constant C_L cruise to weight = OWE + reserve fuel for 200 N.M. alternate field

(6) Descent at max. L/D to M = .8, altitude = 20,000 ft.

(7) Loiter 5 minutes

(8) Constant M = .8 climb to 45,000 ft.

(9) Constant altitude cruise for 200 N.M. at M = .8.

(10) Descent at max. L/D to M = .8, h = 20,000 ft.

(11) Loiter 5 minutes.

(12) Descent at max. L/D to 50 ft. obstacle

(13) Landing

4.3 Propulsion Characteristics

Inlet capture ratio (A_c/A_i) vs. Inlet flow field Mach number (M_1)

M_1	A_c/A_i
0	.8707
.3	.8707
.54	.7347
.7	.6961
.8	.6168
.9	.5986
1.0	.5941
1.2	.6077
1.6	.6395
2.0	.7347
2.2	.8345
2.4	.8685
2.7	1.0
8.0	1.0

Inlet pressure recovery (P_{t_3}/P_{t_1}) vs. Inlet flow field Mach number (M_1)

M_1	P_{t_3}/P_{t_1}
0.0	.938
1.0	.938
1.3	.93
1.65	.91
2.0	.878
2.4	.827
2.75	.771
3.55	.63
4.2	.513
5.0	.384
5.5	.314
6.0	.258
6.35	.224
6.75	.19
7.25	.157
7.75	.13
8.0	.118

Turbojet corrected airflow ($w\frac{\sqrt{\theta}}{\delta}$) vs. Inlet flow field total temperature (T_{t_1}) for base size engine

T_{t_1} (°R)	$w \frac{\sqrt{\theta}}{\delta}$ (#/sec)
400	443
450	439
500	430
570	408.5
750	325.5
830	294.5
900	273
1000	249
1100	231
1200	219
1300	210
1400	199
1500	183
1600	162
1768	127

Turbojet gross thrust per pound of airflow ($F_g/\dot{w}_a$) vs. Engine pressure ratio ($\log_{10} P_{t3}/P_N$) and inlet flow field total temperature (T_{t_1})

$\mathrm{Log}_{10}P_{t_3}/P_N$ T_{t_1}°	400	430	450	470	519	700	800	900	1000	1100	1200	1400	1500	1600
-.0458	144	144.5	145	148.7	146.4	130.8	123.0	0	0	0	0	0	0	0
0.	148	148.5	149.2	152.9	150.7	135.3	127.5	119.6	115.7	0	0	0	0	0
.301	167.9	170.8	173.2	177.9	176.3	163.7	157.0	150.0	143.4	0	0	0	0	0
.4771	179.4	181.4	183.9	189.5	188.0	179.0	173.0	166.7	159.9	0	0	0	0	0
.6021	185.3	188.3	190.8	196.5	195.0	188.5	183.0	176.8	170.1	163.2	0	0	0	0
.7782	194.8	196.9	199.3	204.9	204.1	199.7	196.0	193.8	191.7	190.5	186.5	180.7	171.5	144.0
.9031	199.3	202.6	204.8	210.1	210.0	206.4	203.4	200.0	198.8	197.3	194.6	189.9	178.9	151.8
1.0	204.1	206.6	208.9	213.9	214.2	211.2	208.9	206.3	204.2	202.6	200.6	196.5	184.3	157.4
1.301	0	0	0	0	224.8	223.0	219.2	221.0	219.2	213.0	217.6	215.2	200.3	174.3
1.6021	0	0	0	0	234.0	233.1	231.5	232.7	231.6	231.2	231.1	229.1	214.2	188.4
1.7781	0	0	0	0	239.0	238.6	237.8	237.5	237.8	237.8	237.8	235.4	220.9	194.0
1.9031	0	0	0	0	242.3	242.2	242.1	242.3	242.0	242.0	242.0	239.9	225.0	198.1
2.0	0	0	0	0	245.0	245.0	245.0	245.0	245.0	245.0	245.0	243.0	227.8	200.5

Turbojet fuel-air ratio ($\dot{w}_f/\dot{w}_a$) vs. inlet flow field total temperature (T_{t_1})

T_t, °R	$\dot{w}_f/\dot{w}_a$
400	.0258
425	.02645
450	.02755
470	.0292
1320	.0292
1380	.0283
1440	.02605
1490	.0239
1530	.0217
1570	.01885
1600	.0160
1768	0.

Ramjet performance (I_{sp}) vs. free-stream Mach number (M_∞) and inlet flow field total temperature (T_{t_1})

M_∞	T_{t_1} = 0°R	T_{t_2} = 1000°R
.8	1675.0	1675.0
.85	1768.4	1768.4
.9	1861.0	1861.0
.95	1957.4	1957.4
1.0	2054.9	2054.9
1.1	2334.9	2334.9
1.15	2404.5	2404.5
1.2	2495.0	2495.0
1.3	2686.0	2686.0
1.4	2853.0	2853.0
1.5	2995.3	2995.3

(Continued)

M_∞	T_{t_1} = 0 °R	T_{t_2} = 1000 °R
1.6	3138.7	3138.7
1.8	3354.0	3354.0
2.0	3515.8	3515.8
2.2	3637.0	3637.0
2.4	3738.7	3738.7
2.6	3821.3	3821.3
2.7	3857.2	3847.2
2.8	3879.8	3879.8
2.95	3902.7	3902.7
3.	3908.0	3908.0
3.2	3928.1	3928.1
3.4	3938.4	3938.4
3.6	3925.0	3925.0
3.8	3903.7	3903.7
4.0	3889.7	3889.7
4.2	3867.6	3867.6
4.4	3822.5	3822.5
4.6	3763.3	3763.3
4.8	3702.5	3702.5
5.	3630.0	3630.0
5.2	3568.0	3568.0
5.4	3510.1	3510.1
5.6	3450.6	3450.6
5.8	3387.5	3387.5
5.95	3342.5	3342.5
6.0	3381.5	3381.5

Ramjet equivalence ratio (ϕ) vs. free stream Mach number (M_∞)

M_∞	ϕ
0	1.0
6.0	1.0

Ramjet maximum airflow ratio ($\dot{w}_{RJ_{max}}/\dot{w}_{\text{full capture inlet}}$) vs. Inlet flow field total temperature (T_{t_1})

T_{t_1}, °R	($\dot{w}_{RJ_{max}}/\dot{w}_{\text{full capture inlet}}$)
440	0
700	.4
900	.745
1035	1.0
6000	1.0

Ramjet throttling table at cruise conditions ($M_\infty = 6$); $F_N/F_{N_{max}}$ vs. (SFC/SFC_{max})

$(F_N/F_{N_{max}})$	(SFC/SFC_{max})
0	2.222
.1	1.215
.2	.995
.3	.903
.4	.873
.5	.868
.6	.875
.7	.889
.8	.912
1.0	1.0

4.4 Trajectory Details

The trajectory segment (2) prescribed path is described below.

M_∞	Altitude, ft.
M_∞ at 50' obstacle	50.
.5	3000
.6	5000
.7	11500
.75	16000
.8	21500
.85	24000
.9	27000
.95	29000
1.0	30000
1.1	32700
1.15	33500
1.2	34500
1.3	36500
1.4	38500
1.5	40500
1.6	41500
1.8	44500
2.0	47200
2.2	49000
2.4	51000 (q = 936.4 psf)
2.6	52971 (q = 1000 psf)

4.5 Aerodynamic Characteristics

Linear aerodynamics are based on the following equations:

$$C_D = C_{D_o} + K\,(C_L - C_{L_o})^2$$

$$C_L = C_{L_\alpha}\alpha + C_{L_{\alpha=0}}$$

M_∞	C_{D_o}	C_{L_o}	$C_{L_{\alpha=0}}$	C_{L_α}	K
0	.0078	0.	0.	.0465	.280
.3	.0078	0.	0.	.0465	.280
.4	.0078	0.	0.	.0466	.285
.6	.0078	0.	0.	.0475	.292
.8	.0078	0.	0.	.0545	.302
.9	.0120	0.	0.	.0563	.310
.95	.0170	0.	0.	.0561	.312
1.0	.0199	0.	0.	.0556	.316
1.1	.0199	0.	0.	.0540	.323
1.2	.01645	0.	0.	.0526	.330
1.3	.0156	0.	0.	.0515	.338
1.4	.0148	0.	0.	.0504	.342
2.0	.0119	0.	0.	.0439	.398
2.5	.0177	0.	0.	.0368	.464
3.	.00965	0.	0.	.0302	.579
3.5	.00868	0.	0.	.0262	.700
4.	.0078	0.	0.	.0230	.840
4.5	.00705	0.	-.0060	.0206	.970
5.	.00652	0.	-.0058	.0188	1.068
5.5	.0061	0.	-.00565	.0174	1.162
6.	.005887	0.	-.0055	.0164	1.220

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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                         01/14/77           10.28.30.          PAGE    1

                    LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                    ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                    FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


          STCASE/TABSIZ/
                    TABLE SIZES FOR EACH TABLE USED IN THIS RUN
             ETAB03(30)
             ETAB04(40)
             ETAB05(40)
             ETAB06(225)
             ETAB07(30)
             ETAB08(25)
             ETAB09(120)
             ETAB10(15)
          ATAB46(75)
          ATAB52(50)
          ATAB58(50)
          CLZTAB(75)
             CLATAB(100)
          HTAB01(500)
          HTAB02(502)
          END
                    TOTAL TABLE SIZE FOR THIS RUN IS  1944
```

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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77          10.20.30.          PAGE    2

                           LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                           ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                           FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


          STCASE/DATA1/
   ...
   ...
   ...         DATA FOR PRINT-OUT CONTROL
          IPDICN=1.     $ PRINT DATA BASE DIRECTORY
          IPDICN=0.     $ DO NOT PRINT DATA BASE DIRECTORY
   ..
   ...       CONTROLS PRINT OUT OF MISSION SEGMENTS
         IPSEG=3,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,22,0
   ...
          IPATMO=1.     $ GENERATE TABULAR LISTING OF ATMOSPHERIC PROPERTIES
          IPATMO=0.     $ DO NOT GENERATE TABULAR LISTING OF ATMOSPHERIC PROPERTIES
          IPTZIN=0.     $ DO NOT PRINT TERM ARRAY AS THE INPUT DATA IS PROCESSED
          IPTZIN=1.     $ PRINT THE TERM ARRAY FROM FILLTZ
         IDUMP=0.       $DO NOT PRINT DUMPS DURING CLIMB
   .                      AS THE INPUT DATA FOR EACH
   .                      MISSION SEGMENT IS PROCESSED
          IPENDS=0.     $ DO NOT PRINT SCALED ENGINE DATA
          IPENDS=1.     $ PRINT SCALED ENGINE DATA
          IPENDR=0.     $ DO NOT PRINT RAW ENGINE DATA
          IPENDR=1.     $ PRINT RAW ENGINE DATA
          IPTZXX=1.     $ PRINT TERM ARRAY AS EACH MISSION SEGMENT IS STARTED
          IPRGSV=1.     $ PRINT THE RG SAVE ARRAY FROM EACH MISSION SEGMENT
   ...
   ...          TAKE-OFF AND LANDING DATA
   ...
     SREF  =14724.0.$   WING REFERENCE AREA (SF)
     SPLG  =200.0.$     FLAT PLATE AREA OF GEAR (SF)
     CDPLG =0.5.$       FLAT PLATE DRAG COEF OF GEAR
     AG    =.25.$       GROUND ROLL BODY ANGLE (DEG)
     WSLEFC=37.0.$      WING LEADING EDGE SWEEP ANGLE (DEG)
     DFK   =0.189.$     INDUCED DRAG FACTOR
     XMAXG =7500.0.$    MAXIMUM GROUND ROLL (FT) IGNORED, IF ZERO
     BFOBEX=0.66.$      FLAP SPAN TO EXPOSED WING SPAN RATIO
     CFOCAV=.25.$       AVERAGE FLAP CHORD TO WING CHORD RATIO
     SPCHUT=0.0.$       FLAT PLATE AREA OF DRAG CHUTE (SF)
     CDPCHT=0.0.$       FLAT PLATE DRAG COEFF OF CHUTE
     GRNDFT=0.025.$     GROUND ROLL FRICTION COEFFICIENT TAKE-OFF
     FLAPDT=20.0.$      FLAP DEFLECTION (DEG) TAKE-OFF
     GRNDFL=.35.$       GROUND ROLL FRICTION COEFFICIENT LANDING
     FLAPDL=45.0.$      FLAP DEFLECTION (DEG) LANDING
     FNL   =0.0.$       LANDING THRUST (LB)
   ...    LOW ASPECT RATIO TAKE-OFF VALUES
     ARTHEO=2.0.$       THEORETICAL WING ASPECT RATIO (SPAN**2/SREF)
     AMAXG =20.0.$      MAXIMUM GROUND ROTATION ANGLE (DEG)
     WSLEFC=60.0.$      WING LEADING EDGE SWEEP ANGLE (DEG)
     CFOCAV=.15.$       AVERAGE FLAP CHORD TO WING CHORD RATIO
     CD0   =0.0696. $ DRAG COEFF AT ZERO LIFT
     TRATIO=.20.$       WING TAPER RATIO
     CLATOT=.05115. $ TOTAL LIFT LIFT CURVE SLOPE (PER DEG)
     WINCID=-0.7.   $ WING INCIDENCE AT ZERO ANGLE OF ATTACK
     CL0=0.0.   $LIFT COEFF AT ZERO ANGLE OF ATTACK
```

```
                         LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                         ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                         FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


    HTO=0..  $ ALTITUDE AT START OF TAKEOFF ROLL
 ...
 ...          GENERAL DATA
      PLWINT=160000.0.
      GLEVEL=1.0.
      AVOID1=0.
      AVOID2=0.
  AMTO=.2.
      PSET=1.
      HI=0.0.
      HF=40000.0.
      AMI=0.2.
      AMF=0.825.
      HS=0.0.
      HE=55000.0.
      AMS=0.29.
      AME=0.767.
 ...
 ...
 ...          AERO DATA
  ACSC=100.0.
 ...    LINEAR AERODYNAMICS
     INDAER = 9.     $ TABULAR DATA
     INDA46 =1.      $ CD0 VS MACH M
     INDA52 =1.      $ K21 VS M
     INDA58 =0.      $ MIN DRAG CL  VS  M  IS IDENTICALLY ZERO
     INDCLZ = 1.     $ CL AT ZERO ALPHA VS M AND ALT
     IA46X = 2.      $ NO. ALT
     IA46Y = 21.     $ NO M
     ICLZX = 21.
     ICLZY = 2.
     ATAB46 = 0..900000..       $ ALTITUDES
              0...3..4..6..8..9..95.1..1.1.1.2.1.3.1.4.     $ MACHS
              2..2.5.3..3.5.4..4.5.5..5.5.6..
              .0078..0078..0078..0078..0078..0078..0078..0078.
              .0078..0078..0128..0128..0178..0178..0199..0199.
              .0199..0199..01645..01645..0150..0150..0149..0149.
              .0119..0119..0177..0177..00965..00965..00868..00868.
              .0078..0078..00785..00785..00652..00652..0061..0061.
              .005887..005887.
 ....K21 VS. MACH
     ATAB52 = 21 .0...28..3..28..4..295..6..292..8..312.
                  .9..31..95..312.1...316.1.1..323.1.2..33.
                  1.3..338.1.4..342.2...390.2.5..466.3...579.
                  3.5..7.4...84.4.5..97.5..1.069.5.5.1.162.
                  6..1.22.
     CLZTAB = 0...3..4..6..8..9..95.1..1.1.1.2.1.3.1.4.
              2..2.5.3..3.5.4..4.5.5..5.5.6.. 0..900000..
 ...        ALT = 0.
              0..0..0..0..0..0..0..0..0..0..0..0..0..0..0..0..0..
              -.006.-.0058.-.00965.-.0095.
 ...        ALT = 900000.
```

```
                        LRC TEST PROBLEM NUMBER 3  -----  WSEG III
                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

                   0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,0.,
                   -.006,-.0058,-.00565,-.0055,
              INDCLA = 1.
              ICLAM =21 .
              ICLAN =2.
              CLATAB = 0.,.3,.4,.6,.8,.9,.95,1.,1.1,1.2,1.3,1.4,
                       2.,2.5,3.,3.5,4.,4.5,5.,5.5,6.,8.,500000.,
...               ALT = 0.
                    .0465,.0465,.0466,.0475,.0545,.0563,.0561,.0556,
                    .0546,.0526,.0515,.0504,.0439,.0368,.0302,.0262,
                    .0230,.0204,.0188,.0174,.0164,
...               ALT = 500000.
                    .0465,.0465,.0466,.0475,.0545,.0563,.0561,.0556,
                    .0546,.0526,.0515,.0504,.0439,.0368,.0302,.0262,
                    .0230,.0204,.0188,.0174,.0164,
...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ..
...
...
...           ATMOSPHERIC DATA
      INDATM=0.
      INDATM=3.
...
...                   DATA FOR USER SPECIFIED TEMPERATURE PROFILE
      NHC=11.
      HC=-16404.0, 0.0, 36089.01, 65617.01, 104987.0, 154199.01,
          170604.01, 200131.01, 259186.01, 291160.01, 295276.01,
      TM=577.19, 518.69, 389.99, 389.99, 411.59, 487.19, 487.19,
         454.79, 325.19, 325.19, 379.19,
      PM=3711.2839, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
...
...
...           THRUST DATA
  FF=.25,
  FPOL=1.0,
      FFLMIN=0.001,
      SFCFAC=1.05,
      NUMENG=4,
      TSIZEF=1.0,
      THRMIN=0.1,
...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ...   ..
....   CHECK PROBLEM 3
    INDFE1 = 0.
    INDFE2 = 0.
    INDFE3 = 1.
    INDFE4 = 1.
    INDFE5 = 1.
    INDFE6 = 1.
    INDFE7 = 1.
    INDFE8 = 1.
    INDFE9 = 1.
    INDF10 = 1.
    INDCLA = 1.
```

```
                    LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                    ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                    FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


 ...   CHECK  PROBLEM  3
     IE13N = 14.
     ETAB13 = 0.,.3,.54,.7,.8,.9,1.,1.2,1.6,2.,2.2,2.4,2.7,8.,
              .8787,.8727,.7347,.6961,.6168,.5986,.5941,.6877,
              .6295,.7347,.8345,.8685,1.,1.,
     IE14N = 17.
     ETAB14= 0.,1.,1.3,1.65,2.,2.4,2.75,3.55,4.2,5.,5.5,6.,6.25,
             6.75,7.25,7.75,8.,
             .939,.938,.93,.91,.879,.827,.771,.63,.513,.384,.314,
             .250,.224,.19,.157,.13,.119,
     IE05N = 15.
     ETAB05 =  400.,451.,500.,570.,750.,850.,900.,1000.,1100.,
               1200.,1300.,1400.,1500.,1600.,1760.,
               443.,439.,438.,408.5,325.5,294.5,273.,249.,231.,
               219.,211.,199.,183.,162.,127.,
     IETA  = 14.
     IEGA  = 13.
     ETAB06 = 400.,430.,450.,470.,519.,700.,850.,900.,1000.,1100.,
              1200.,1400.,1500.,1600.,
              -.1450,0.,.301,.4771,.6021,.7782,.9031,1.0,1.301,
              1.6021,1.7781,1.9031, 2.0,
              144.,144.5,145.,148.7,146.4,130.8,123.,0.,0.,0.,0.,
              0.,0.,0.,
              149.,148.5,149.2,152.9,150.7,135.3,127.5,119.6,
              115.7,0.,0.,0.,0.,0.,
              167.9,178.8,173.2,177.9,176.3,163.7,157.,150.,143.4,
              0.,0.,0.,0.,0.,
              179.4,181.4,183.9,189.5,188.,179.,173.,166.7,158.9,
              0.,0.,0.,0.,0.,
              185.3,188.3,192.8,194.5,195.,188.5,183.,176.0,170.1,
              163.2,0.,0.,0.,0.,
              194.8,198.9,199.3,204.9,204.1,199.7,196.,193.0,191.7,
              190.5,186.5,180.7,171.5,144.0,
              199.3,202.6,204.8,216.1,210.,206.4,203.4,200.,198.8,
              197.3,194.6,189.9,178.9,151.8,
              204.1,208.6,209.9,213.9,214.2,211.2,208.9,206.3,
              204.2,202.6,200.6,190.9,184.3,157.4,
              0.,0.,0.,0.,224.8,223.3,219.2,221.,219.2,213.,
              217.6,215.2,206.3,174.3,
              0.,0.,0.,0.,234.,233.1,231.5,232.7,231.6,231.2,
              231.1,229.1,216.2,188.4,
              0.,0.,0.,0.,239.,238.6,237.8,237.5,237.8,237.8,
              237.8,235.4,224.9,196.6,
              0.,0.,0.,0.,242.3,242.2,242.1,242.3,242.,242.,242.,
              239.9, 225.,199.1,
              0.,0.,0.,0.,245.,245.,245.,245.,245.,245.,245.,
              243.,227.0,208.5,
     IE07N = 12.
     ETAB07= 400.,425.,450.,470.,1320.,1380.,1440.,1490.,1530.,
             1570.,1600.,1760.,
             .0298,.02645,.02755,.0292,.0292,.0283,.02689,.0239,
             .0217,.01895,.0168 .0.,
HSEG II ---AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.28.43.           PAGE     6
   *
                      LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
   *                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

        IE08H = 11.
        ETAB08= 0.,.1,.2,.3,.4,.5,.6,.7,.8,.9,1.,
                2.222,1.215,.995,.963,.873,.860,.875,.889,.912,1.,1.0,
        IE09H = 37.
        ETAB09 = .8,.85,.9,.95,1.,1.1,1.15,1.2,1.3,1.4,1.5,1.6,1.8,
                 2.,2.2,2.4,2.6,2.7,2.8,2.95,3.0,3.2,3.4,3.6,3.8,4.,
                 4.2,4.4,4.6,4.8,5.,5.2,5.4,5.6,5.8,5.95,6.,
                1675.,1768.4,1861.,1957.4,2254.9,2334.9,2484.5,
                2495.,2686.,2857.,2995.3,3138.7,3354.,3515.9,3637.,   $ 12/75
                3738.7,3821.3,3857.2,3870.8,3902.7,3908.,3928.1,
                3938.4,3925.,3963.7,3989.7,3867.6,3822.5,3763.3,
                3722.5,3632.,3564.,3512.1,3458.6,3287.5,3342.5,
                3301.5,
                1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,
                1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,1.,
        IE10H = 5.
        ETAB10 = 446.,766.,980.,1035.,6000.,
                 0.,.4,.745,1.0,1.0,
  ...     SPECIAL INPUTS FOR DUAL ENGINE OPTION
        IEDP=0.
        AINLET = 40. ,
        DELWNG = -0.7,     $ WING COMPRESSION SURFACE ANGLE
        DELIN =  4.0 ,
        AMINRJ = 0.8,
        AMAXTJ = 3.0,
         ALPLIM=20.,       $MAX ANGLE OF ATTACK ALLOWABLE FOR DUAL ENG COMP
         IPDENG=0.      $NULL DIAGNOSTIC PRINT IN ENGINE ROUTINE
  .....
         IASCAL = 1.  $AUTOMATICALLY SCALE ENGINES DURING CLIMB TO PROVIDE
  .....                THRUST REQUIRED.
       PLWINT=0.,
       QLIM=1700.,
        CLC=.25,    $CRUISE LIFT COEFFICIENT FOR RAMJET SCALING
        CLMAX=1.0,  $MAX LIFT COEFFICIENT
         AMLIM=6.01,
       WT=494960.,
      WE=819600.,
      WGTO=815000.,
       WL=494960.,
       OWF=494960.,
       RAREWT=494960.,
         AINLET = 95.,
         TMINTJ=0.01,
         TMINRJ=0.01,
       SREF=14772.,
       XISW=14772.,
       IEDP=2.  $  COMBINATION ENGINE OPTION
          END
```

```
                                         LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                         ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                         FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

... NASA TEST PROBLEM 3. NSEG VERSION III.
...
    SEGMENT(2).OPTION(21)
...   ENGINE SCALING OPTION
      PROPULSIVE MODE = DUAL
    SCALE TURBOJET--THRUST=326000..  (LBS. TOTAL)
... TURBOJET IS SCALED AT SEA LEVEL
  SCALE RAMJET       CRUISE THRUST MARGIN=0.4.
    CRUISE MACH=6.0.  CRUISE ALTITUDE=99120..
    AERO OPTION=1.
   END
 6.0000      .40000      6.0000      .32600E+06  99120.          91000 0.                 21 0.          1111111111
...
      SEGMENT(3) .OPTION(17).
      COMPUTE WARM-UP AND TAKE-OFF FUEL ALLOWANCE
      WARM-UP TIME=5.0.(MIN)
      END
 2.     -    0.          0.          5.0000      2.0000          91000  2.0000            17 0.          1111111111
...
     SEGMENT(4).OPTION(13).
.....  START OF WEIGHT ITERATION LOOP.  GUESSED INITIAL WEIGHT
.....  IS 800000. LBS.
     NEW WEIGHT=800000.. LBS
     END
 0.          0.          .80000E+06 0.          0.              91000 0.                 13 0.          1111111111
      SEGMENT(5) .OPTION(1).
  FLY LINEAR MACH-ALTITUDE PATH
  END MACH NUMBER =0.9.
  END ALTITUDE=3000..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
   END
  .90000      3000.0      0.          4.0000      0.              91100 0.                  1 0.          1111111111
...
      SEGMENT(6) .OPTION(1).
  FLY LINEAR MACH-ALTITUDE PATH
  END MACH NUMBER =0.6.
  END ALTITUDE=5000..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM AVAILABLE
   END
  .60000      5000.0      0.          4.0000      0.              91100 0.                  1 0.          1111111111
...
      SEGMENT(7) .OPTION(1).
  FLY LINEAR MACH-ALTITUDE PATH
  END MACH NUMBER =0.8.
  END ALTITUDE=21500..
      PROPULSIVE MODE = DUAL
     .THRUST = MAXIMUM AVAILABLE
   END
  .80000      21500.      0.          4.0000      5.              91100 0.                  1 0.          1111111111
...
```

```
                                                    LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                                    ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                    FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

       SEGMENT(8), OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.95.
   END ALTITUDE=29020..
       PROPULSIVE MODE = DUAL
       THRUST = MAXIMUM AVAILABLE
    END
  .95000      29020.     0.           4.0000      0.              51100 0.                 1 0.          1111111111
...
       SEGMENT(9), OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =1.5.
   END ALTITUDE=40500..
       PROPULSIVE MODE = DUAL
       THRUST = MAXIMUM AVAILABLE
    END
  1.5000      40500.     0.           4.0000      0.              51100 0.                 1 0.          1111111111
...
       SEGMENT(10),OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =2.6.
   END ALTITUDE=52971..
       PROPULSIVE MODE = DUAL
       THRUST = MAXIMUM AVAILABLE
    END
  2.6000      52971.     0.           4.0000      0.              51100 0.                 1 0.          1111111111
...
       SEGMENT(11), OPTION(1).
   FLY CONSTANT Q PATH
   END MACH NUMBER =5.95.
   END ALTITUDE=87990..
       PROPULSIVE MODE = DUAL
       THRUST = MAXIMUM AVAILABLE
    END
  5.9500      87990.     0.           5.0000      0.              51100 0.                 1 0.          1111111111
...
       SEGMENT(12), OPTION(1).
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =5.99.
   END ALTITUDE=99120..
       PROPULSIVE MODE = DUAL
       THRUST = MAXIMUM AVAILABLE
    END
  5.9900      99120.     0.           4.0000      0.              51100 0.                 1 0.          1111111111
......SCALE RAMJET AT CRUISE MACH AND ALT BASED ON CURRENT WEIGHT
    SEGMENT(13),OPTION(21).
    PROPULSIVE MODE=DUAL
    SCALE RAMJET---CRUISE THRUST MARGIN=0.4.
    CRUISE MACH=6.0, CRUISE ALTITUDE=99120..
    COMPUTE ANGLE OF ATTACK FOR SCALING BASED ON CURRENT WEIGHT
    END
  6.0000      .40000     6.0000     0.           -99120.          51100 0.                21 0.          1111111111
```

TABLE OF CONTENTS

SECTION PAGE

1.0 INTRODUCTION 1 1/A7

2.0 PROBLEM NO. 1 - MACH 3, JP FUELLED TURBOJET POWERED VEHICLE RANGE DETERMINATION 2 1/A8

2.1 Vehicle Characteristics 2 1/A8
2.2 Mission Characteristics 2 1/A8
2.3 Propulsion Characteristics. 3 1/A9
2.4 Trajectory Details 8 1/A14
2.5 Aerodynamic Characteristics 9 1/B1

3.0 PROBLEM NO. 2 - MACH 14 HYDROGEN FUELLED TURBOJET/ SCRAMJET PROPULSION RANGE DETERMINATION 48 1/D12

3.1 Vehicle Characteristics 48 1/D12
3.2 Mission Characteristics 48 1/D12
3.3 Propulsion Characteristics. 49 1/D13
3.4 Trajectory Details. 53 1/E3
3.5 Aerodynamic Characteristics 54 1/E4

4.0 PROBLEM No. 3 - MACH 6 HYDROGEN FUELLED TURBORAMJET WITH ENGINE SCALING 74 1/F10

4.1 Vehicle Characteristics 74 1/F10
4.2 Mission Characteristics 74 1/F10
4.3 Propulsion Characteristics. 75 1/F11
4.4 Trajectory Details. 82 1/G4
4.5 Aerodynamic Characteristics 83 1/G5

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                                                               LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                               FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


..... LOOP BACK ONCE TO START OF CLIMB USING RESCALED ENGINE
     SEGMENT(14),OPTION(22),
     START LOOP AT BEGINNING OF SEGMENT(5)
     FINISH LOOP AT END OF SEGMENT(12)
     NUMBER OF ITERATIONS =1..
     END
 0.          0.          0.          5.0000      12.000          51100 0.                   22  1.0000     1111111111
...
   SEGMENT(15),OPTION(6),
   CRUISE AT CONSTANT LIFT COEFFICIENT
     NUMBER OF INTEGRATION STEPS = 10,
      END WEIGHT=530000..  POUNDS
    THRUST = THRUST REQUIRED
    PROPULSIVE MODE = DUAL
    END
 0.          0.          .53000E+06 0.          0.              51010  1.0000               6 0.       1111111111
...
      SEGMENT(16), OPTION(1),
   USE MAX L/D AS BASIS FOR SELECTION
   SEARCH AT CONSTANT SPECIFIC ENERGY
   END MACH NUMBER =0.8,
   END ALTITUDE=20000..
      PROPULSIVE MODE = DUAL
     THRUST=MINIMUM ALLOWABLE
     END
  .80000      20000.      3.0000      1.0000      0.              51210 0.                    1 0.       1111111111
...
      SEGMENT(17), OPTION(17),
   COMPUTE LOITER FUEL ALLOWANCE
   LOITER TIME=5.0, (MINUTES)
   THRUST=THRUST REQUIRED
     END
 0.          0.          0.          5.0000      1.0000          51010  2.0000              17 0.       1111111111
...
      SEGMENT(18), OPTION(1),
   FLY LINEAR MACH-ALTITUDE PATH
   END MACH NUMBER =0.8,
   END ALTITUDE=45000..
      PROPULSIVE MODE = DUAL
      THRUST = MAXIMUM ALLOWABLE
     END
  .80000      45000.      3.0000      4.0000      0.              51110 0.                    1 0.       1111111111
...
      SEGMENT(19), OPTION(7),
   RANGE=200., N.M.
      THRUST = THRUST REQUIRED
     END
 0.          0.          0.          1.0000      200.00          51010 0.                    7 0.       1111111111
...
      SEGMENT(20), OPTION(1),
   USE MAX L/D AS BASIS FOR SELECTION
   SEARCH AT CONSTANT SPECIFIC ENERGY
```

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      NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77           10.20.47.          PAGE   15

                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


   END MACH NUMBER =0.8,
   END ALTITUDE=20000.,
      PROPULSIVE MODE = DUAL
     THRUST=MINIMUM ALLOWABLE
     END
  .80000      20000.      3.0000      1.0000      0.                51210 0.                    1 0.          1111111111
...
      SEGMENT(21), OPTION(17),
   COMPUTE LOITER FUEL ALLOWANCE
   LOITER TIME=5.0, (MINUTES)
   THRUST=THRUST REQUIRED
     END
 0.          0.          0.          5.0000      1.0000            51010  2.0000               17 0.          1111111111
...
      SEGMENT(22), OPTION(1),
   USE MAX L/D AS BASIS FOR SELECTION
   SEARCH AT CONSTANT SPECIFIC ENERGY
   END MACH NUMBER =0.2,
   END ALTITUDE=50.0,
      PROPULSIVE MODE = DUAL
      THRUST = MINIMUM ALLOWABLE
     END
  .20000      50.000      3.0000      1.0000      0.                51210 0.                    1 0.          1111111111
.....
     SEGMENT(23),OPTION(22),
     START LOOP AT BEGINNING OF SEGMENT(4)---WEIGHT IS TO BE VARIED
     FINISH LOOP AT END OF SEGMENT(20)---RANGE IS TO BE SATISFIED
     DESIRED RANGE=7350., NAUT MI
     NUMBER OF ITERATIONS = 2.,
     END
 1.0000      2.0000      7350.0      4.0000      20.000            51210 0.                   22  2.0000      1111111111
    SEGMENT(24),OPTION(17),
    PROPULSIVE MODE=DUAL
    THRUST = MINIMUM ALLOWABLE
    COMPUTE LANDING PERFORMANCE
    END MISSION
 0.          0.          0.          0.          1.0000            51210  4.0000               17 0.          1111111111



     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77           10.20.47.          PAGE   16

                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                            RUN

END OF NSEGII INPUT FOR CURRENT CASE.  0 INPUT ERRORS DETECTED.
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                              LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                           MISSION SEGMENT TABLE

          .22000     0.         .81500E+06  6.0100     1200.0     .50000E-01  1.0000     100.00                0
   2     4.0000      .40000    6.0000      .32600E+06 99120.          51000 0.                    21           0  1111111111
   3     0.         0.         0.          5.0000     2.0000          51000  2.0000               17           0  1111111111
   4     0.         0.          .80000E+06 0.         0.              51000 0.                    13           0  1111111111
   5      .50000    3000.0     0.          4.0000     0.              51100 0.                     1           0  1111111111
   6      .60000    5000.0     0.          4.0000     0.              51100 0.                     1           0  1111111111
   7      .80000    21500.     0.          4.0000     0.              51100 0.                     1           0  1111111111
   8      .95000    29300.     0.          4.0000     0.              51100 0.                     1           0  1111111111
   9     1.5000     40500.     0.          4.0000     0.              51100 0.                     1           0  1111111111
  10     2.6000     52971.     0.          4.0000     0.              51100 0.                     1           0  1111111111
  11     5.9500     87990.     0.          5.0000     0.              51100 0.                     1           0  1111111111
  12     5.9900     99120.     0.          4.0000     0.              51100 0.                     1           0  1111111111
  13     5.0000      .40000    6.0000     0.         -99120.          51100 0.                    21           0  1111111111
  14     0.         0.         0.          5.0000     12.000          51100 0.                    22           X  1111111111
  15     0.         0.          .53000E+06 0.         0.              51010  1.0000                6           0  1111111111
  16      .80000    20000.     3.0000      1.0000     0.              51210 0.                     1           0  1111111111
  17     0.         0.         0.          5.0000     1.0000          51010  2.0000               17           0  1111111111
  18      .80000    45300.     3.0000      4.0000     0.              51110 0.                     1           0  1111111111
  19     0.         0.         0.          1.5000     200.00          51010 0.                     7           0  1111111111
  20      .80000    20000.     2.3500      1.0000     0.              51210 0.                     1           0  1111111111
  21     0.         0.         0.          5.0000     1.0000          51010  2.0000               17           0  1111111111
  22      .20000    50.000     3.2000      1.0000     0.              51210 0.                     1           0  1111111111
  23     1.0000     2.0000     7350.0      4.0000     20.000          51210 0.                    22           X  1111111111
  24     0.         0.         0.         0.          1.0000          51210  4.0000               17           0  1111111111
```

```
           TURBOJET PERFORMANCE (PER ENGINE) AT SEA LEVEL STATIC CONDITIONS


TURBOJET GROSS THRUST - - - - - - - - - - -   81506.1      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -    81500.0      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - -    550.325      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - -    16.0695      (LB/SEC)
SPECIFIC FUEL CONSUMPTION - - - - - - - -    .709765      ((LB FUEL/HR)/LB THRUST)
BASE ENGINE SCALING FACTOR  - - - - - - -    1.38286      (NO UNITS)
MAXIMUM AIRFLOW RATE OF BASE ENGINE - - -    424.266      (LB/SEC)
PRESSURE RATIO (PT3/PN) - - - - - - - - -    .938000      (NO UNITS)
ANGLE OF ATTACK - - - - - - - - - - - - -   0.            (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - -.700000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - -  6.00000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -  81500.0      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - -  -995.760      (LB)
```

```
           RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER


RAMJET GROSS THRUST - - - - - - - - - - -    27446.4      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -    27404.7      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - -    277.967      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - -    8.11653      (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - -    3381.50      (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - -      1.000      (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - -    99120.0      (FEET)
SCALING MACH NUMBER - - - - - - - - - - -      6.000      (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - -    279.379      (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - -    3.37480      (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - -.700000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - -  6.00000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -  27404.7      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - -    1346.03      (LB)
INLET SPILLAGE DRAG - - - - - - - - - - -    .304498E-10 (LB)
ENGINE INLET AREA - - - - - - - - - - - -     32.412      (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - -       .995      (NO UNITS)
```

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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                      01/14/77            10.20.51.           PAGE   19

                                                  LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                  ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                         INPUT TO TAKEOFF CALCULATIONS
 WING REFERENCE AREA  (SF)                              SREF  =   14724.00
 FLAT PLATE AREA OF GEAR (SF)                           SPLG  =   200.0000
 FLAT PLATE DRAG COEFF OF GEAR                          CDPLG =   .5000000
 GROUND ROLL BODY ANGLE (DEG)                           AG    =   .2500000
 MAXIMUM GROUND ROTATION ANGLE (DEG)                    AMAXG =   20.00000
 WING INCIDENCE (DEG)                                   WINCID=  -.7000000
 THEORETICAL WING ASPECT RATIO                          ARTHEO=   2.000000
 WING LEADING EDGE SWEEP ANGLE (DEG)                    WSLEFC=   60.00000
 TOTAL LIFT LIFT CURVE SLOPE (PER DEG)                  CLATOT=   .5115000E-01
 LIFT COEF AT ZERO ANGLE OF ATTACK                      CL0   =  0.
 WING TAPER RATIO                                       TRATIO=   .2000000
 INDUCED DRAG FACTOR                                    DFK   =   .1090000
 GROUND ROLL FRICTION COEFFICIENT                       GRNDFT=   .2500000E-01
 DRAG COEFF AT ZERO LIFT                                CD0   =   .8600000E-02
 WEIGHT AT START OF TAKE-OFF (LB)                       W0    =   814783.6
 TAKE-OFF THRUST (LB)                                   FN0   =   307702.1
 FUEL FLOW RATE  (LBS/HR)                               FFR   =   216359.5
 SPECIFIC FUEL CONSUMPTION  (1./HR)                     SFC   =   .7031460
 SPECIFIC IMPULSE AT TAKE-OFF (SEC)                     XISO  =   5119.847
 FLAP SPAN TO EXPOSED WING SPAN RATIO                   BFOBEX=   .6600000
 FLAPDEFLECTION (DEG)                                   FLAPDT=   20.00000
 AVERAGE FLAP CHORD TO WING CHORD RATIO                 CFOCAV=   .1500000
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/14/77            10.20.51.           PAGE   20

                                                 LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                 ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                 FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                        OUTPUT FROM TAKEOFF CALCULATIONS
 MAXIMUM WING LIFT COEFFICIENT                          CLMAX =   1.104521
 MAXIMUM WING PLUS FLAP LIFT COEFFICIENT                CLMAXF=   1.282280
 FLAP LIFT COEFFICIENT INCREMENT                        DELCLF=   .1777593
 GROUND ROTATION WING LIFT COEFFICIENT                  CLU   =   .8814043
 GROUND ROTATION WING PLUS FLAP LIFT COEFFICIENT        CLUF  =   1.059164
 GROUND ROLL LIFT COEFIICIENT                           CLG   =  -.2296236E-01
 LIFT COEFFICIENT AT OBSTACLE                           CL50  =   .8740691
 GROUND ROLL DRAG COEFIICIENT                           CDG   =   .1626274E-01
 GROUND ROTATION DRAG COEFFICIENT                       CDU   =   .1910320
 DRAG COEFFICIENT AT OBSTACLE                           CD50  =   .1306589
 GROUND ROTATION BODY ANGLE (DEG)                       AU    =   19.34293
 ANG. OF ATTACK FOR MAXIMUM LIFT COEFF (DEG)            AWMAX =   23.36217
 POWER OFF STALL SPEED (KNOTS)                          VSTAL =   112.7206
 FLIGHT SPEED CORRESPONDING TO CLUF (KNOTS)             VU    =   124.0349
 FLIGHT SPEED AT OBSTACLE (KNOTS)                       V50   =   136.4304
 GROUND ROLL DISTANCE (FT)                              XG    =   1981.011
 TAKE-OFF DISTANCE OVER OBSTACLE (FT)                   X50   =   2904.566
 GROUND ROLL TIME (SEC)                                 TG    =   18.91333
 TAKE-OFF TIME (SEC)                                    T50   =   23.32207
 FUEL USED FOR TAKE-OFF (LB)                            DELW  =   1401.653
 WEIGHT AT OBSTACLE (LB)                                W50   =   813381.9
 RATE OF CLIMB AT OBSTACLE (FPS)                        ROC   =   52.75779
 FLIGHT PATH ANGLE AT OBSTACLE (DEG)                    GAM50 =   13.23409

  3. ****** XCLECT END     OPTION  17 ******
                        WT     =   .81338E+06     H      =   50.000          AM     =   .20640

                        TIME   =  0.              RANGE =  0.                FUEL   =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    5.6070          CPU TIME USED IN PREVIOUS TASK =   .11400

 RGSAVE
IT7          WT              H            AM        TAC***         FUEL        RUN***         XNZZ   E10   E11 OPTION
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/14/77            10.20.53.          PAGE   21

                                              LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                  LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE          WEIGHT       FUEL         ALTITUDE     MACH NO.     V (KNOTS)    GAM7D         NET THRUST       SFC

    0.000   0.              800000.   0.                  50.         .206          136.          4.64   304301.0        .72816

     .127   .29867          799530.    470.4             197.         .221          146.          5.03   305361.4        .72492

     .230   .54478          799152.    847.9             345.         .236          156.          5.68   307528.5        .71927

     .317   .78744          798830.   1170.              492.         .250          165.          6.14   308911.4        .71565

     .395   1.0061          798544.   1456.              640.         .265          175.          6.46   309783.5        .71342

     .466   1.2161          798283.   1717.              788.         .280          184.          6.67   310323.4        .71218

     .531   1.4258          798043.   1957.              935.         .294          194.          6.81   310658.0        .71143

     .592   1.6225          797817.   2183.             1082.         .309          204.          6.88   310813.7        .71126

     .650   1.8229          797603.   2397.             1230.         .324          213.          6.91   310848.8        .71150

     .706   2.0231          797398.   2602.             1377.         .339          223.          6.90   310874.0        .71197

     .759   2.2239          797201.   2799.             1525.         .353          232.          6.87   310889.2        .71261

     .811   2.4260          797010.   2990.             1672.         .368          242.          6.81   310914.4        .71338

     .861   2.6299          796826.   3174.             1820.         .383          251.          6.75   310964.1        .71424

     .909   2.8360          796645.   3355.             1967.         .397          261.          6.67   311040.6        .71516

     .957   3.0446          796469.   3531.             2115.         .412          270.          6.59   311177.7        .71612

    1.003   3.2559          796297.   3703.             2262.         .427          280.          6.50   311353.6        .71712

    1.049   3.4702          796127.   3873.             2410.         .441          289.          6.41   311581.0        .71813

    1.093   3.6878          795961.   4039.             2557.         .456          299.          6.31   311872.9        .71914

    1.137   3.9087          795796.   4204.             2705.         .471          308.          6.22   312222.7        .72007

    1.181   4.1332          795634.   4366.             2852.         .485          318.          6.12   312627.2        .72107

    1.223   4.3613          795473.   4527.             3000.         .500          327.          6.27   313090.5        .72207
  5. ****** SELECT END     OPTION    1 ******
                       WT     =   .79547E+06     H     =   3000.0          AM     =   .50000

                       TIME   =   .83333E-01     RANGE =  0.               FUEL   =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    6.7530           CPU TIME USED IN PREVIOUS TASK =    1.1220

  RGSAVE
 ITZ          WT             H            AM        TAC***         FUEL       RUN***          XNZZ    E10    E11 OPTION
  41   .7955E+06   3000.          .5000        .2639E-01   4527.         4.361          1.000      -0.    0.      1


 UNPACK         51      51100           5           1          1          0          0.          1
   .00000       5000.0      0.             4.0000      0.                51100 0.                       1 0.             1111111111
```

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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.20.55.          PAGE   22

                                   LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                   ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                   FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE         WEIGHT      FUEL          ALTITUDE     MACH NO.     V (KNOTS)   GAMYD       NET THRUST       SFC

   0.000   0.              795473.   0.               3000.         .500         327.        0.99   313116.4       .72202

    .019    .10398         795401.    72.39           3100.         .505         330.        0.96   312851.7       .72225

    .038    .20855         795329.    144.5           3200.         .510         333.        0.91   312590.4       .72249

    .057    .31377         795257.    216.2           3300.         .515         337.        0.86   312354.3       .72273

    .076    .41948         795185.    287.7           3400.         .520         340.        0.81   312119.4       .72296

    .095    .52564         795114.    358.8           3500.         .525         343.        0.77   311893.6       .72319

    .114    .63281         795043.    429.7           3600.         .530         346.        0.72   311676.9       .72341

    .133    .74039         794973.    500.3           3700.         .535         349.        0.67   311469.3       .72363

    .152    .84858         794903.    570.6           3800.         .540         352.        0.62   311270.8       .72384

    .170    .95739         794832.    640.6           3900.         .545         355.        0.57   311062.3       .72406

    .189    1.0668         794763.    710.4           4000.         .550         359.        0.52   310853.1       .72428

    .208    1.1769         794693.    780.0           4100.         .555         362.        0.47   310654.3       .72450

    .226    1.2876         794624.    849.4           4200.         .560         365.        0.43   310484.7       .72470

    .244    1.3989         794555.    918.5           4300.         .565         368.        0.38   310314.1       .72490

    .263    1.5109         794486.    987.4           4400.         .570         371.        0.33   310152.5       .72510

    .281    1.6235         794417.    1056.           4500.         .575         374.        0.29   310000.0       .72529

    .299    1.7368         794349.    1125.           4600.         .580         377.        0.24   309856.4       .72548

    .318    1.8507         794280.    1193.           4700.         .585         380.        0.19   309721.7       .72567

    .336    1.9652         794212.    1261.           4800.         .590         384.        0.15   309595.9       .72585

    .354    2.0804         794144.    1329.           4900.         .595         387.        0.10   309479.0       .72602

    .372    2.1962         794077.    1397.           5000.         .600         390.        0.00   309370.0       .72619

 6. ****** KCLECT END     OPTION   1 ******
                      WT     =   .79408E+06     H      =   5000.0        AM     =   .60000

                      TIME   =   .10372         RANGE =    4.3613        FUEL   =   4526.9

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    7.8060          CPU TIME USED IN PREVIOUS TASK =    1.1420

 MGSAVE
ITZ           WT              H              AM        TAC***         FUEL        RUN***          XNZZ    E10    E11 OPTION
 51    .7941E+06    5000.          .6000         .6200E-02    1397.        2.196          1.000         -0.     0.      1


UNPACK          61      51100          5          1          1          0         0.          1
  .00030       21560.      0.             4.0000       0.                     51100 0.                        1 0.          1111111111
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    NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                            01/14/77            18.20.57.           PAGE   23

                                               LRC TEST PROBLEM NUMBER 3  ------  NSEG III
                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                               FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                    LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME          RANGE          WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMFD         NET THRUST        SFC

     0.000   0.                   794077.   0.                 5000.          .600          390.         13.62   309369.3         .72620

      .088    .56013              793750.    326.7             5825.          .610          395.         13.44   303675.4         .72526

      .177    1.1357              793426.    651.0             6650.          .620          400.         13.09   298195.7         .72426

      .268    1.7274              793104.    973.1             7475.          .630          406.         12.74   292665.4         .72332

      .359    2.3357              792784.    1293.             8300.          .640          411.         12.41   287280.3         .72231

      .452    2.9611              792466.    1611.             9125.          .650          416.         12.08   281996.0         .72128

      .546    3.6040              792149.    1927.             9950.          .660          421.         11.76   276734.7         .72025

      .642    4.2650              791835.    2242.            10775.          .670          426.         11.45   271652.2         .71915

      .739    4.9446              791522.    2554.            11600.          .680          431.         11.14   266605.3         .71805

      .837    5.6432              791212.    2865.            12425.          .690          436.         10.84   261661.3         .71691

      .937    6.3619              790902.    3175.            13250.          .700          441.         10.54   256665.3         .71602

     1.039    7.1015              790594.    3483.            14075.          .710          446.         10.25   251683.1         .71525

     1.143    7.8632              790286.    3790.            14900.          .720          451.          9.96   246821.7         .71444

     1.248    8.6472              789980.    4097.            15725.          .730          456.          9.68   242012.3         .71361

     1.355    9.4547              789674.    4402.            16550.          .740          461.          9.40   237295.4         .71275

     1.464    10.287              789370.    4707.            17375.          .750          465.          9.13   232613.6         .71189

     1.576    11.144              789066.    5011.            18200.          .760          470.          8.86   228009.8         .71100

     1.689    12.027              788762.    5315.            19025.          .770          475.          8.60   223475.7         .71010

     1.805    12.938              788459.    5618.            19850.          .780          479.          8.35   219656.3         .70914

     1.923    13.877              788156.    5921.            20675.          .790          484.          8.10   214716.2         .70814

     2.044    14.845              787853.    6223.            21500.          .800          488.          7.97   210332.2         .70714
 7. ****** XCLECT END     OPTION   1 ******
                         WT     =   .78785E+06      H      =   21500.         AM     =   .80000

                         TIME   =   .10992         RANGE  =   6.5575         FUEL   =   1396.5

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    9.6730          CPU TIME USED IN PREVIOUS TASK =    1.1780

 RGSAVE
ITZ            WT              H              AM        TAC***          FUEL        RUN***          XNZZ   E10    E11 OPTION
 61   .7879E+06   .2150E+05   .8000              .3407E-01   6223.         14.85          1.000         -0.    0.      1


UNPACK          71      51100          5           1           1           0           0.           1
  .95000        29000.      0.              4.0000      0.                    51100 0.                           1 0.            1111111111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/14/77           10.21.00.          PAGE   24

                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                               LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT       FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST        SFC

     0.000   0.              787853.   0.              21500.         .800         488.         7.30   216328.5        .78715

      .059    .48115         787678.    175.4          21875.         .807         492.         7.33   227098.7        .82118

      .118    .95866         787497.    356.4          22250.         .815         496.         7.27   225558.2        .81953

      .177   1.4489          787314.    539.0          22625.         .822         500.         7.08   224002.2        .81796

      .238   1.9523          787130.    723.5          23000.         .830         503.         6.89   222476.1        .81636

      .300   2.4697          786943.    910.0          23375.         .837         507.         6.71   220979.8        .81471

      .363   3.0015          786755.   1099.           23750.         .845         511.         6.52   219447.2        .81311

      .428   3.5489          786564.   1289.           24125.         .852         515.         6.34   217915.2        .81151

      .493   4.1125          786371.   1483.           24500.         .860         518.         6.15   216411.4        .80987

      .561   4.6931          786175.   1678.           24875.         .867         522.         5.97   214941.5        .80819

      .630   5.2915          785976.   1877.           25250.         .875         526.         5.79   213463.3        .80655

      .700   5.9089          785775.   2078.           25625.         .882         529.         5.62   212010.6        .80487

      .772   6.5462          785570.   2283.           26000.         .890         533.         5.44   210506.1        .80316

      .847   7.2044          785362.   2491.           26375.         .897         537.         5.23   209170.6        .80143

      .923   7.8895          785149.   2704.           26750.         .905         540.         5.00   207711.0        .79973

     1.004   8.6160          784926.   2927.           27125.         .912         544.         4.69   206280.6        .79799

     1.090   9.3931          784693.   3161.           27500.         .920         548.         4.39   204877.8        .79622

     1.181  10.225           784446.   3407.           27875.         .927         551.         4.09   203476.2        .79445

     1.278  11.121           784185.   3668.           28250.         .935         555.         3.79   202070.4        .79271

     1.383  12.090           783907.   3947.           28625.         .942         558.         3.49   200691.6        .79093

     1.496  13.146           783608.   4245.           29000.         .950         562.         3.34   199235.8        .78912
  0. ****** XCLECT END     OPTION   1 ******
                        WT     =   .78361E+06     H      =    29000.          AM     =    .95000

                        TIME   =   .14399         RANGE  =    21.403          FUEL   =    6223.2

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    10.259          CPU TIME USED IN PREVIOUS TASK =    1.1860

 RGSAVE
ITZ          WT            H             AM        TAC***        FUEL        RUN***          XNZZ    E10    E11 OPTION
 71   .7836E+06   .2900E+05   .9500          .2494E-01   4245.         13.15          1.000          -0.     0.       1


UNPACK        81     51100          5           1         1          0          0.         1
  1.5000      40500.      0.             4.0000      0.                    51100 0.                   1 0.           1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/14/77          10.21.03.         PAGE   25

                                     LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                     ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                     FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                        LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME          RANGE          WEIGHT       FUEL          ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST       SFC

    0.000    0.                  783600.   0.                29000.         .950         562.          1.87   199339.3        .70912

     .306     2.6987             782803.    805.4            29575.         .977         577.          1.70   201309.6        .70935

     .671     6.4551             781830.    1779.            30150.        1.005         592.          1.42   203073.3        .79135

    1.081     10.951             780724.    2884.            30725.        1.032         606.          1.27   202708.1        .80102

    1.518     15.018             779533.    4075.            31300.        1.060         621.          1.16   202527.1        .81164

    1.983     19.880             778253.    5355.            31875.        1.087         635.          1.13   202570.4        .82067

    2.425     24.613             777619.    6509.            32450.        1.115         650.          1.17   205318.4        .82045

    2.839     29.142             775851.    7757.            33025.        1.142         664.          1.24   203170.7        .83053

    3.218     33.384             774760.    8841.            33600.        1.170         678.          1.33   201984.8        .85335

    3.561     37.291             773779.    9829.            34175.        1.197         692.          1.42   201328.1        .86619

    3.881     41.024             772842.   .1077E+05         34750.        1.225         706.          1.45   201150.4        .87722

    4.197     44.781             771909.   .1170E+05         35325.        1.252         720.          1.44   201272.5        .88690

    4.506     48.531             770982.   .1263E+05         35900.        1.280         734.          1.41   201787.8        .89510

    4.826     52.404             770012.   .1360E+05         36475.        1.307         749.          1.40   202592.8        .90471

    5.097     55.898             769186.   .1443E+05         37050.        1.335         765.          1.78   217081.3        .85559

    5.330     58.894             768456.   .1516E+05         37625.        1.362         781.          1.86   222967.8        .84971

    5.545     61.722             767765.   .1584E+05         38200.        1.390         797.          1.96   227413.3        .84644

    5.746     64.414             767115.   .1649E+05         38775.        1.417         813.          2.05   231571.6        .84444

    5.936     67.011             766491.   .1712E+05         39350.        1.445         828.          2.12   235438.8        .84363

    6.116     69.523             765889.   .1772E+05         39925.        1.472         844.          2.19   239313.9        .84288

    6.288     71.956             765310.   .1830E+05         40500.        1.500         860.          2.23   243231.4        .84206
  9. ****** XCLECT END     OPTION   1 ******
                      WT     =   .76531E+06      H      =   40500.          AM     =   1.5000

                      TIME   =   .16893          RANGE  =   34.549          FUEL   =   6245.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMUL/ 'VE CPU TIME =    11.933          CPU TIME USED IN PREVIOUS TASK =   1.6740

 RGSI
ITZ          WT            H             AM       TAC***         FUEL       RUN***        XNZZ   E1C    E11 OPTION
 01   .7653E+06   .4050E+05   1.500       .1040       .1830E+05   71.96        1.000      -0.     0.      1


UNPACK       91     51100         5         1         1          0        0.         1
  2.6000      52971.     3.          4.0000     0.                 51100 0.                   1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                               01/14/77          10.21.07.          PAGE   26

                                     LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                     ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                     FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                        LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL          ALTITUDE    MACH NO.   V (KNOTS)   GAMTD        NET THRUST       SFC

     0.000   0.              765320.   0.               40500.       1.500        860.        1.51  243243.6        .04197

      .260    3.9020         764371.    937.8           41124.       1.555        891.        1.57  256940.4        .04029

      .505    7.4875         763495.   1815.            41747.       1.610        923.        1.70  271040.0        .03791

      .717    10.806         762672.   2637.            42371.       1.665        954.        1.83  285117.3        .03695

      .909    13.899         761893.   3416.            42994.       1.720        986.        1.95  299121.0        .03595

     1.085    16.841         761148.   4160.            43618.       1.775       1017.        2.02  309448.0        .03114

     1.252    19.710         760429.   4880.            44241.       1.830       1049.        2.07  316624.0        .02631

     1.410    22.510         759731.   5577.            44865.       1.885       1080.        2.11  324500.9        .02176

     1.561    25.271         759055.   6253.            45488.       1.940       1112.        2.15  331995.1        .01764

     1.725    27.976         758399.   6910.            46112.       1.995       1144.        2.16  339091.5        .01397

     1.846    30.725         757742.   7566.            46735.       2.050       1175.        2.13  347631.0        .01290

     1.987    33.530         757067.   8241.            47359.       2.105       1207.        2.08  359221.6        .01330

     2.129    36.357         756373.   8936.            47983.       2.160       1238.        2.03  370450.0        .01371

     2.268    39.203         755659.   9650.            48606.       2.215       1270.        1.97  381787.0        .01319

     2.410    42.323         754919.   .1039E+05        49230.       2.270       1301.        1.87  387209.4        .01116

     2.559    45.590         754137.   .1117E+05        49853.       2.325       1333.        1.73  389626.6        .01004

     2.716    49.135         753304.   .1200E+05        50477.       2.380       1364.        1.59  392049.0        .01004

     2.884    52.993         752416.   .1289E+05        51100.       2.435       1396.        1.47  395171.3        .00849

     3.059    57.113         751471.   .1384E+05        51724.       2.490       1427.        1.43  403432.9        .00827

     3.229    61.203         750538.   .1477E+05        52347.       2.545       1459.        1.51  411729.1        .00735

     3.381    64.920         749690.   .1562E+05        52971.       2.600       1490.        1.56  419729.0        .00645
 10. ****** XCLECT END    OPTION   1 ******
                       WT     =  .74969E+06     H     =   52971.        AM    =   2.6000

                       TIME   =  .27372         RANGE =   106.51        FUEL  =   10300.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    14.017          CPU TIME USED IN PREVIOUS TASK =   2.0740

 RGSAVE
ITZ           WT              H             AM       TAC***          FUEL       RUN***          XNZZ   E10    E11 OPTION
 91    .7497E+06    .5297E+05    2.600          .5635E-01    .1562E+05   64.93         1.000      -0.     0.      1


UNPACK         101     51100           5          1          1          0         3.          1
  5.9500       47990.      0.             5.0000      0.                  51100 0.                       1 0.          1111111111
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     WSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                        01/14/77            10.21.16.          PAGE   27

                                                              LRC TEST PROBLEM NUMBER 3  -----  WSEG III
                                                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                                CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

  TIME         RANGE        WEIGHT        FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMTD          NET THRUST        SFC

     0.000   0.                749691.   0.               52971.         2.600         1490.          2.61   419657.7        .88643

      .250    6.3117           748282.    1409.           54722.         2.695         1545.          2.53   419054.2        .88591

      .507    13.068           746841.    2850.           56473.         2.811         1611.          2.43   411783.1        .88530

      .756    19.885           745491.    4200.           58224.         2.932         1681.          2.32   394640.7        .89065

     1.016    27.319           744129.    5562.           59975.         3.050         1753.          1.95   335530.4        .91996

     1.343    37.094           742475.    7216.           61726.         3.190         1828.          1.59   324754.4        .91689

     1.697    48.287           740751.    8940.           63477.         3.327         1907.          1.41   314107.4        .91516

     2.079    61.495           738951.   .1074E+05        65228.         3.478         1989.          1.24   303442.6        .91537

     2.523    74.877           737018.   .1267E+05        66979.         3.619         2076.          1.07   292249.8        .91798

     2.971    91.420           734962.   .1473E+05        68730.         3.774         2168.           .94   281102.6        .92131

     3.482    110.29           732791.   .1690E+05        70481.         3.935         2263.           .82   271170.0        .92475

     4.038    131.71           730504.   .1919E+05        72231.         4.103         2363.           .73   262340.1        .92861

     4.639    155.98           728093.   .2160E+05        73982.         4.270         2467.           .64   254001.6        .93551

     5.292    183.32           725537.   .2415E+05        75733.         4.460         2576.           .56   245533.5        .94673

     6.008    214.73           722797.   .2689E+05        77484.         4.649         2687.           .49   235361.1        .96107

     6.809    251.39           719819.   .2987E+05        79235.         4.845         2804.           .42   225041.9        .97733

     7.710    294.43           716566.   .3313E+05        80986.         5.049         2925.           .35   214062.6        .99671

     8.729    345.16           712974.   .3672E+05        82737.         5.262         3052.           .30   205441.3        1.0149

     9.870    404.91           709029.   .4066E+05        84488.         5.482         3184.           .25   196712.1        1.0337

    11.188    475.91           704649.   .4504E+05        86239.         5.712         3321.           .21   187704.4        1.0551

    12.702    561.57           699711.   .4998E+05        87990.         5.950         3464.           .19   179245.0        1.0781
 11. ****** SELECT END    OPTION   1 ******
                     WT     =   .69971E+06      H      =   87990.          AM     =   5.9500

                     TIME   =   .37814          RANGE  =   171.43          FUEL   =   15610.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    15.467           CPU TIME USED IN PREVIOUS TASK =    1.4600

 RGSAVE
ITZ           WT            H             AM        TAC***         FUEL        RUN***         XN22    E10    E11 OPTION
101   .6997E+06   .8799E+05   5.950        .2117        .4998E+05   561.6        1.000          -0.     0.      1


UNPACK        111      51100           5            1          1          0          2.           1
  5.9500       99120.      0.            4.0000      0.                   51100 0.                        1 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77          10.21.14.          PAGE   28

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                           LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE          WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAM7D         NET THRUST        SFC

   0.000   0.                 699711.   0.                87990.        5.950         3464.         1.92   179805.0         1.0781

    .047    2.7293            699560.    150.6            88546.        5.952         3466.         1.89   175210.8         1.0776

    .096    5.5623            699407.    303.9            89103.        5.954         3469.         1.82   172079.2         1.0772

    .147    8.5065            699250.    460.3            89659.        5.956         3471.         1.75   169025.3         1.0768

    .200    11.570            699091.    619.9            90216.        5.958         3474.         1.68   166054.9         1.0764

    .255    14.764            698927.    783.2            90772.        5.960         3476.         1.61   163165.0         1.0759

    .313    18.097            698760.    950.6            91329.        5.962         3479.         1.54   160355.8         1.0755

    .373    21.563            698588.    1122.            91885.        5.964         3481.         1.47   157622.5         1.0751

    .436    25.236            698411.    1299.            92442.        5.966         3484.         1.40   154964.0         1.0747

    .502    29.072            698229.    1482.            92998.        5.968         3486.         1.33   152379.0         1.0743

    .572    33.111            698041.    1670.            93555.        5.970         3489.         1.26   149865.7         1.0739

    .645    37.376            697845.    1866.            94111.        5.972         3491.         1.20   147420.7         1.0735

    .723    41.899            697641.    2069.            94668.        5.974         3494.         1.13   145042.9         1.0731

    .805    46.698            697429.    2282.            95224.        5.976         3496.         1.06   142730.6         1.0727

    .893    51.860            697205.    2505.            95781.        5.978         3499.          .99   140481.1         1.0723

    .987    57.798            696971.    2740.            96337.        5.980         3501.          .92   138293.8         1.0720

   1.088    63.215            696721.    2990.            96894.        5.982         3503.          .85   136166.1         1.0716

   1.199    69.634            696455.    3256.            97450.        5.984         3506.          .78   134096.4         1.0713

   1.318    76.650            696169.    3542.            98007.        5.986         3508.          .71   132082.4         1.0709

   1.451    84.369            695858.    3853.            98563.        5.988         3511.          .64   130123.5         1.0706

   1.598    93.023            695517.    4194.            99120.        5.990         3513.          .61   128216.5         1.0703

 12. ****** SELECT END     OPTION   1 ******
                  WT     =   .69552E+06      H     =   99120.         AM     =   5.9900

                  TIME   =   .54178          RANGE =   733.26         FUEL   =   49980.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    17.217          CPU TIME USED IN PREVIOUS TASK =    1.7400

 RGSAVE
IT2          WT              H             AM        TAC***          FUEL        RUN***          XNZZ    E10    E11 OPTION
111   .6955E+06    .9912E+05   5.990         .2663E-01   4194.         93.02          1.000         -0.    0.      1


UNPACK         121      51100            5          1          1          0          0.          21
  5.0000       .40000       6.0000      0.           -99120.           51100 0.                     21 0.            1111111111
```

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            RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER


RAMJET GROSS THRUST - - - - - - - - - - - -   39142.3      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -   39812.2      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - -   396.419      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - -   11.5754      (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - -   3381.50      (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - -     1.000      (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - -   99120.0      (FEET)
SCALING MACH NUMBER - - - - - - - - - - -     6.000      (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - -   397.573      (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - -   5.14441      (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - -.700000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - -  6.00000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -  39812.2      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - -   3847.37      (LB)
INLET SPILLAGE DRAG - - - - - - - - - - -   .391423E-10  (LB)
ENGINE INLET AREA - - - - - - - - - - - -    39.380      (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - -      .997      (NO UNITS)
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                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                     MISSION SEGMENT TABLE

         .26000      0.           .81500E+06  6.3100      1200.0      .50000E-01  1.0000      100.00                0
  2      4.3000      .40000       6.0000      .32600E+06  99120.           51000 0.                    21           0 1111111111
  3      0.          0.           0.          5.0000      2.0000           51000  2.0000               17           0 1111111111
  4      0.          0.           .82000E+06  0.          0.               51000 0.                    13           0 1111111111
  5      .50000      3000.0       0.          4.0000      0.               51100 0.                     1           0 1111111111
  6      .60000      5000.0       0.          4.0000      0.               51100 0.                     1           0 1111111111
  7      .86000      21500.       0.          4.0000      0.               51100 0.                     1           0 1111111111
  8      .95000      29000.       0.          4.0000      0.               51100 0.                     1           0 1111111111
  9      1.5000      40500.       0.          4.0000      0.               51100 0.                     1           0 1111111111
 10      2.6000      52971.       0.          4.0000      0.               51100 0.                     1           0 1111111111
 11      5.9500      87990.       0.          5.0000      0.               51100 0.                     1           0 1111111111
 12      5.9900      99120.       0.          4.0000      0.               51100 0.                     1           0 1111111111
 13      5.0000      .45000       6.0200      0.          -99120.          51100 0.                    21           0 1111111111
 14      0.          0.           0.          5.0000      12.000           51100 0.                    22           X 1111111111
 15      0.          0.           .53000E+06  0.          0.               51010  1.0000                6           0 1111111111
 16      .80000      20900.       3.0000      1.0000      0.               51210 0.                     1           0 1111111111
 17      0.          0.           0.          5.0000      1.0000           51010  2.0000               17           0 1111111111
 18      .80000      45000.       3.0000      4.0000      0.               51110 0.                     1           0 1111111111
 19      0.          0.           0.          1.0000      200.00           51010 0.                     7           0 1111111111
 20      .80000      23000.       3.0000      1.0000      0.               51210 0.                     1           0 1111111111
 21      0.          0.           0.          5.0000      1.0000           51010  2.0000               17           0 1111111111
 22      .23600      50.000       3.0000      1.0000      0.               51210 0.                     1           0 1111111111
 23      1.0000      2.0000       7350.0      4.0000      20.000           51210 0.                    22           X 1111111111
 24      0.          0.           0.          0.          1.0000           51210  4.0000               17           0 1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                  01/14/77            10.21.14.          PAGE   30

                                               LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                               FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


  DUMPRG

 SEG      WT          H            AM      TIME          FUEL      RANGE         XNZZ       E10  E11 OPTION
   1   .8150E+06  0.           .2000    0.            0.          0.          1.000         0.   0.     X
   2   .8150E+06  0.           .2000    0.            0.          0.          1.000        -0.   0.    21
   3   .8134E+06   50.00       .2064       .8333E-01   1610.      0.          1.000        -0.   0.    17
   4   .8000E+06   50.00       .2064    0.            0.          0.          1.000        -0.   0.    13
   5   .7955E+06   3000.       .5000       .2039E-01   4527.        4.361     1.000        -0.   0.     1
   6   .7941E+06   5000.       .6000       .6200E-02   1397.        2.196     1.000        -0.   0.     1
   7   .7879E+06   .2150E+05   .8000       .3407E-01   6223.        14.05     1.000        -0.   0.     1
   8   .7836E+06   .2900E+05   .9500       .2494E-01   4245.        13.15     1.000        -0.   0.     1
   9   .7653E+06   .4050E+05   1.500       .1040       .1030E+05  71.96       1.000        -0.   0.     1
  10   .7497E+06   .5297E+05   2.600       .5635E-01   .1562E+05  64.93       1.000        -0.   0.     1
  11   .6997E+06   .8799E+05   5.950       .2117       .4998E+05  561.6       1.000        -0.   0.     1
  12   .6955E+06   .9912E+05   5.990       .2663E-01   4194.        93.02     1.000        -0.   0.     1
  13   .6955E+06   .9912E+05   5.990    0.             4194.      0.          1.000        -0.   0.    21
  14 -0.         -0.         -0.         -0.        -0.          -0.        -0.             1.  -0.    -0
  15 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  16 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  17 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  18 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  19 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  20 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  21 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  22 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  23 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
  24 -0.         -0.         -0.         -0.        -0.          -0.        -0.            -0.  -0.    -0
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            18.21.17.          PAGE   31

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                           LINEAR MACH ALTITUDE CLIMB PATH HISTORY
  TIME        RANGE         WEIGHT      FUEL          ALTITUDE      MACH NO.    V (KNOTS)    GAM7D        NET THRUST        SFC
     0.000   0.              800000.    0.                  50.         .206          136.         4.64   304301.0          .72816

      .127    .29867         799530.    470.4              197.         .221          146.         5.03   305361.4          .72492

      .230    .55478         799152.    847.9              345.         .236          156.         5.68   307528.5          .71927

      .317    .78744         798830.    1170.              492.         .250          165.         6.14   308911.4          .71566

      .395   1.0061          798544.    1456.              640.         .265          175.         6.46   309783.5          .71342

      .466   1.2161          798283.    1717.              798.         .280          184.         6.67   310323.4          .71210

      .531   1.4208          798043.    1957.              935.         .294          194.         6.81   310650.0          .71143

      .592   1.6225          797817.    2183.             1082.         .309          204.         6.88   310813.7          .71126

      .650   1.8229          797603.    2397.             1230.         .324          213.         6.91   310848.8          .71150

      .706   2.0231          797398.    2602.             1377.         .339          223.         6.90   310874.0          .71197

      .759   2.2239          797201.    2799.             1525.         .353          232.         6.87   310889.2          .71261

      .811   2.4260          797010.    2990.             1672.         .368          242.         6.81   310914.4          .71330

      .861   2.6299          796826.    3174.             1820.         .383          251.         6.75   310964.1          .71424

      .909   2.8360          796645.    3355.             1967.         .397          261.         6.67   311048.6          .71516

      .957   3.0446          796469.    3531.             2115.         .412          270.         6.59   311177.3          .71612

     1.003   3.2559          796297.    3703.             2262.         .427          280.         6.50   311353.6          .71712

     1.049   3.4702          796127.    3873.             2410.         .441          289.         6.41   311581.0          .71813

     1.093   3.6878          795961.    4039.             2557.         .456          299.         6.31   311872.9          .71914

     1.137   3.9087          795796.    4204.             2705.         .471          308.         6.22   312222.7          .72007

     1.181   4.1332          795634.    4366.             2852.         .485          318.         6.12   312627.2          .72107

     1.223   4.3613          795473.    4527.             3000.         .500          327.         6.07   313090.5          .72207
 15. ****** XCLECT END     OPTION   1 ******
                    WT     =  .79547E+06     H      =   3000.0          AM     =   .50000

                    TIME   =  .83333E-01     RANGE =  0.                FUEL   =   4193.7

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    18.597          CPU TIME USED IN PREVIOUS TASK =   1.1140

 RGSAVE
ITZ             WT                 H                AM        TAC***         FUEL       RUN***          XNZZ   E10   E11 OPTION
 41   .7955E+06   3000.         .5000          .2039E-01   4527.         4.361         1.000          -0.    0.      1

UNPACK          51      51100            5            1          1          0          0.           1
  .60000        5000.0       0.              4.0000      0.                 51100 0.                         1 0.             1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                       01/14/77          13.21.19.          PAGE   32

                                        LPC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                            LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME         RANGE         WEIGHT       FUEL         ALTITUDE      MACH NO.     V (KNOTS)    GAM7D         NET THRUST       SFC

     0.000   0.               795473.   0.               3000.         .500          327.          0.99   313110.4        .72282

      .019    .10398          795401.    72.39           3100.         .505          330.          0.96   312851.7        .72225

      .038    .20855          795329.    144.5           3200.         .510          333.          0.91   312598.4        .72249

      .057    .31372          795257.    216.2           3300.         .515          337.          0.86   312354.3        .72273

      .076    .41948          795185.    287.7           3400.         .520          340.          0.81   312119.4        .72296

      .095    .52584          795114.    358.8           3500.         .525          343.          0.77   311893.6        .72319

      .114    .63281          795043.    429.7           3600.         .530          346.          0.72   311676.9        .72341

      .133    .74039          794973.    500.3           3700.         .535          349.          0.67   311469.3        .72363

      .152    .84858          794903.    570.6           3800.         .540          352.          0.62   311270.8        .72384

      .170    .95739          794832.    640.6           3900.         .545          355.          0.57   311062.3        .72406

      .189   1.0668           794763.    710.4           4000.         .550          359.          0.52   310853.1        .72428

      .208   1.1769           794693.    780.0           4100.         .555          362.          0.47   310664.3        .72450

      .226   1.2876           794624.    849.4           4200.         .560          365.          0.43   310434.7        .72470

      .244   1.3989           794555.    918.5           4300.         .565          368.          0.38   310314.1        .72490

      .263   1.5109           794486.    987.4           4400.         .570          371.          0.33   310152.5        .72510

      .281   1.6235           794417.    1055.           4500.         .575          374.          0.29   310000.0        .72529

      .299   1.7368           794349.    1125.           4600.         .580          377.          0.24   309856.4        .72548

      .318   1.8567           794280.    1193.           4700.         .585          380.          0.19   309721.7        .72567

      .336   1.9652           794212.    1261.           4800.         .590          384.          0.15   309595.9        .72585

      .354   2.0804           794144.    1329.           4900.         .595          387.          0.10   309479.0        .72602

      .372   2.1962           794077.    1397.           5000.         .600          390.          0.08   309370.0        .72619
 16. ****** XCLECT END     OPTION    1 ******
                               WT     =    .79408E+06      H      =    5000.0          AM     =    .60000

                               TIME   =    .10372          RANGE  =    4.3613          FUEL   =    4526.9

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    19.743           CPU TIME USED IN PREVIOUS TASK =    1.1460

 RGSAVE
ITZ          WT                H                AM         TAC***          FUEL          RUN***          XNZZ    E10    E11 OPTION
 51    .79412E+06    5000.          .6000          .6200E-02   1397.          2.196          1.000          -0.     0.      1


UNPACK         61      51100            5           1           1           0          0.          1
  .80000       21500.      0.              4.0000      0.                   51100 0.                      1 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.21.21.           PAGE   38

                                     LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                     ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                     FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE         WEIGHT      FUEL         ALTITUDE      MACH NO.     V (KNOTS)   GAM7D      NET THRUST        SFC

    0.000  0.               794077.  0.                5000.          .600          390.        13.62  309369.3         .72620

     .088    .56003         793750.   326.7            5825.          .610          395.        13.44  303675.4         .72520

     .177   1.1357          793426.   651.0            6650.          .620          400.        13.09  298195.9         .72420

     .268   1.7274          793104.   973.1            7475.          .630          406.        12.74  292665.4         .72332

     .359   2.3357          792784.   1293.            8300.          .640          411.        12.41  287200.3         .72231

     .452   2.9611          792466.   1611.            9125.          .650          416.        12.00  281996.0         .72120

     .546   3.6040          792149.   1927.            9950.          .660          421.        11.76  276734.7         .72025

     .642   4.2650          791835.   2242.           10775.          .670          426.        11.45  271652.2         .71915

     .739   4.9446          791522.   2554.           11600.          .680          431.        11.14  266605.3         .71809

     .837   5.6432          791212.   2865.           12425.          .690          436.        10.84  261661.3         .71691

     .937   6.3619          790902.   3175.           13250.          .700          441.        10.54  256665.3         .71602

    1.039   7.1015          790594.   3483.           14075.          .710          446.        10.25  251683.1         .71520

    1.143   7.8632          790286.   3790.           14900.          .720          451.         9.96  246821.7         .71444

    1.240   8.6472          789980.   4097.           15725.          .730          456.         9.60  242012.3         .71361

    1.355   9.4547          789674.   4402.           16550.          .740          461.         9.40  237295.4         .71279

    1.464   10.287          [illegible]376.   4707.           17375.          .750          465.         9.13  232613.6         .71189

    1.576   11.144          789066.   5011.           18200.          .760          470.         8.86  228009.8         .71100

    1.689   12.027          788762.   5315.           19025.          .770          475.         8.60  223475.7         .71010

    1.805   12.938          788459.   5618.           19850.          .780          479.         8.35  219050.3         .70914

    1.923   13.877          788156.   5921.           20675.          .790          484.         8.10  214716.2         .70814

    2.044   14.845          787853.   6223.           21500.          .800          488.         7.97  210332.2         .70714
 17. ****** XCLECT END     OPTION   1 ******
                   WT     =   .78785E+06      H      =   21500.          AM     =   .80000

                   TIME   =   .10992        RANGE =   6.5575          FUEL   =   1396.5

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    20.919          CPU TIME USED IN PREVIOUS TASK =   1.1760

 RGSAVE
ITZ           WT            H            AM        TAC***          FUEL        RUN***          XNZZ    E1C   E11 OPTION
 61    .7879E+06    .2150E+05    .8000          .3407E-01    6223.          14.05          1.000      -0.    0.     1


UNPACK          71      51100          5           1          1           0          0.          1
  .95000        29000.      0.               4.0000      0.                   51100 0.                      1 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77          10.21.24.          PAGE   34

                                            LRC TEST PROBLEM NUMBER 3  ------  NSEG III
                                            ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                            FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                               LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAM7D         NET THRUST       SFC

    0.000   0.               787853.  0.             21500.         .800        488.          7.45   210320.5       .70715
     .058    .47175          787675.   177.9         21875.         .807        492.          7.50   230972.2       .84309
     .115    .93663          787491.   362.0         22250.         .815        496.          7.46   229414.0       .84136
     .173   1.4136           787306.   547.7         22625.         .822        500.          7.27   227840.9       .83952
     .232   1.9032           787118.   735.6         23000.         .830        503.          7.09   226296.1       .83778
     .292   2.4061           786929.   924.2         23375.         .837        507.          6.90   224780.6       .83583
     .354   2.9227           786738.   1115.         23750.         .845        511.          6.71   223220.1       .83402
     .416   3.4541           786545.   1308.         24125.         .852        515.          6.53   221675.5       .83220
     .480   4.0009           786349.   1504.         24500.         .860        518.          6.34   220150.5       .83034
     .546   4.5638           786151.   1702.         24875.         .867        522.          6.16   218650.6       .82845
     .612   5.1436           785952.   1903.         25250.         .875        526.          5.98   217150.7       .82659
     .681   5.7414           785747.   2107.         25625.         .882        529.          5.80   215683.0       .82470
     .751   6.3578           785540.   2313.         26000.         .890        533.          5.63   214236.5       .82278
     .822   6.9941           785331.   2523.         26375.         .897        537.          5.43   212797.5       .82084
     .896   7.6556           785116.   2737.         26750.         .905        540.          5.18   211314.1       .81892
     .974   8.3566           784893.   2961.         27125.         .912        544.          4.88   209859.6       .81696
    1.057   9.1032           784659.   3195.         27500.         .920        548.          4.57   208432.3       .81497
    1.144   9.9014           784412.   3441.         27875.         .927        551.          4.27   207006.1       .81299
    1.237   10.759           784152.   3702.         28250.         .935        555.          3.97   205575.5       .81103
    1.337   11.684           783875.   3978.         28625.         .942        558.          3.67   204171.5       .80904
    1.445   12.687           783580.   4273.         29000.         .950        562.          3.52   202794.0       .80702
 10. ****** SELECT END    OPTION   1 ******
                    WT    =   .78358E+06     H     =   29000.          AM    =   .95000

                    TIME  =   .14399         RANGE =   21.403          FUEL  =   6223.2

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


 CUMULATIVE CPU TIME =   22.105          CPU TIME USED IN PREVIOUS TASK =   1.1060

 RGSAVE
ITZ          WT            H          AM       TAC***        FUEL       RUN***         XNZZ   E10   E11 OPTION
 71   .7836E+06    .2900E+05    .9500        .2400E-01    4273.         12.69         1.000       -0.    0.     1


UNPACK         81      51100          5          1          1          0         0.          1
  1.5000        40500.      0.           4.0000       0.                   51100 0.                       1 0.            1111111111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                 01/14/77            10.21.27.          PAGE   35

                                               LRC TEST PROBLEM NUMBER 3  ------  NSEG III
                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                               FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME           RANGE          WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAM7D          NET THRUST        SFC

    0.000    0.                 783580.    0.               29000.          .950          562.          1.98    202793.5         .80782

     .288     2.7310            782790.     790.1           29575.          .977          577.          1.81    205695.6         .80745

     .627     6.0277            781856.     1731.           30150.         1.005          592.          1.54    206066.7         .81031

    1.006     9.8162            780782.     2798.           30725.         1.032          606.          1.36    205820.9         .82473

    1.414     13.986            779621.     3960.           31300.         1.060          621.          1.24    205024.2         .83042

    1.852     18.573            778357.     5223.           31875.         1.087          635.          1.20    204493.2         .85120

    2.266     23.001            777147.     6433.           32450.         1.115          650.          1.24    207633.7         .85079

    2.663     27.344            775972.     7609.           33025.         1.142          664.          1.27    204361.4         .87544

    3.036     31.517            774852.     8729.           33600.         1.170          678.          1.34    202269.3         .89599

    3.379     35.433            773809.     9771.           34175.         1.197          692.          1.41    200842.1         .91406

    3.705     39.229            772806.    .1077E+05        34750.         1.225          706.          1.41    200012.1         .92906

    4.030     43.098            771791.    .1179E+05        35325.         1.252          720.          1.39    199556.8         .94395

    4.353     47.001            770773.    .1281E+05        35900.         1.280          734.          1.35    199566.6         .95614

    4.688     51.147            769698.    .1388E+05        36475.         1.307          749.          1.45    200094.4         .96952

    4.956     54.532            768822.    .1476E+05        37050.         1.335          765.          1.74    220253.6         .89799

    5.179     57.464            768082.    .1550E+05        37625.         1.362          781.          1.96    226679.7         .88878

    5.383     60.075            767391.    .1619E+05        38200.         1.390          797.          2.09    232254.2         .88339

    5.571     62.595            766743.    .1684E+05        38775.         1.417          813.          2.23    237432.4         .87908

    5.747     65.017            766123.    .1746E+05        39350.         1.445          828.          2.29    242251.1         .87770

    5.914     67.324            765518.    .1805E+05        39925.         1.472          844.          2.38    247049.0         .87581

    6.071     69.554            764956.    .1862E+05        40500.         1.500          860.          2.43    251871.0         .87395
 19. ****** XCLECT END      OPTION   1 ******
                        WT      =    .76496E+06      H      =    40500.          AM      =    1.5000

                        TIME    =    .16807         RANGE =    34.090          FUEL    =    4273.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    23.779           CPU TIME USED IN PREVIOUS TASK =    1.6740

 RGSAVE
ITZ           WT            H            AM       TAC***          FUEL       RUN***         XNZZ    E10    E11 OPTION
 81   .7650E+06    .4050E+05    1.500          .1012          .1862E+05   69.55          1.000         -0.     0.     1


UNPACK          91      51103           5          1          1          0          0.          1
  2.6000        52971.      0.             4.0000      0.                 51100 0.                        1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                     01/14/77          10.21.31.          PAGE   36

                                               LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                               FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                   LINEAR MACH ALTITUDE CLIMB PATH HISTORY

    TIME          RANGE          WEIGHT       FUEL            ALTITUDE      MACH NO.     V (KNOTS)   GAMTD          NET THRUST       SFC

      0.000   0.                  764956.   0.                  40500.         1.500          860.          1.65   251090.2         .07383

       .244    3.5524             764037.    919.3              41124.         1.555          891.          1.73   267650.1         .07029

       .458    6.7906             763182.    1774.              41747.         1.610          923.          1.89   283888.9         .06615

       .649    9.7691             762380.    2575.              42371.         1.665          954.          2.05   299997.1         .06378

       .820    12.531             761623.    3333.              42994.         1.720          986.          2.20   316310.9         .06146

       .974    15.106             760905.    4051.              43618.         1.775         1017.          2.36   333102.0         .05859

      1.114    17.515             760222.    4734.              44241.         1.830         1049.          2.51   350197.4         .05681

      1.242    19.781             759569.    5387.              44865.         1.885         1080.          2.67   367434.1         .05350

      1.359    21.919             758943.    6013.              45488.         1.940         1112.          2.80   384970.2         .05133

      1.468    23.974             758338.    6618.              46112.         1.995         1144.          2.85   395209.8         .04879

      1.575    26.034             757736.    7219.              46735.         2.050         1175.          2.83   405782.8         .04445

      1.681    28.122             757125.    7831.              47359.         2.105         1207.          2.80   420863.1         .04330

      1.784    30.232             756503.    8453.              47983.         2.160         1238.          2.77   433959.5         .04222

      1.887    32.366             755871.    9085.              48606.         2.215         1270.          2.72   447913.2         .04030

      1.989    34.555             755225.    9731.              49230.         2.270         1301.          2.61   454692.8         .03795

      2.094    36.861             754555.    .1040E+05          49853.         2.325         1333.          2.47   458071.7         .03624

      2.203    39.308             753858.    .1110E+05          50477.         2.380         1364.          2.33   461420.5         .03452

      2.316    41.906             753131.    .1183E+05          51100.         2.435         1396.          2.21   465470.9         .03225

      2.431    44.617             752378.    .1258E+05          51724.         2.490         1427.          2.17   475723.7         .03111

      2.543    47.308             751633.    .1332E+05          52347.         2.545         1459.          2.26   485969.0         .02939

      2.646    49.830             750937.    .1402E+05          52971.         2.600         1490.          2.33   495876.6         .02769
  20. ****** KCLECT END     OPTION    1 ******
                     WT     =   .75094E+06      H      =   52971.          AM    =   2.6000

                     TIME   =   .26926          RANGE  =   103.64          FUEL  =   10625.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =   25.853          CPU TIME USED IN PREVIOUS TASK =   2.0740

  RGSAVE
 ITZ            WT              H             AM        TAC***         FUEL        RUN***         XNZZ    E10    E11 OPTION
  91   .7509E+06    .5297E+05    2.600           .4410E-01    .1402E+05    49.83          1.000          -0.    0.     1


 UNPACK          101      51100           5           1          1           0          0.          1
   5.9500         87990.      0.              5.0000      0.                     51100 0.                        1 0.            1111111111
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                                LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                  CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

 TIME       RANGE       WEIGHT      FUEL          ALTITUDE    MACH NO.    V (KNOTS)   GAMTD       NET THRUST      SFC

   0.000   0.           750937.   0.             52971.        2.600        1490.        3.73   495798.9      .92767

    .175   4.4138       749742.    1195.         54722.        2.695        1545.        3.55   495854.9      .92584

    .361   9.3055       748476.    2462.         56473.        2.811        1611.        3.32   487799.7      .92442

    .546   14.359       747261.    3677.         58224.        2.932        1681.        3.12   468348.7      .92636

    .739   19.490       746032.    4906.         59975.        3.058        1753.        2.68   426853.5      .91996

    .972   26.416       744604.    6333.         61726.        3.190        1828.        2.24   393847.5      .91609

   1.222   34.633       743122.    7816.         63477.        3.327        1907.        2.00   380957.6      .91514

   1.493   43.391       741580.    9357.         65228.        3.470        1989.        1.76   368048.3      .91537

   1.791   53.494       739933.   .1100E+05      66979.        3.619        2076.        1.53   354499.7      .91798

   2.118   65.044       738192.   .1275E+05      68730.        3.774        2168.        1.34   341180.1      .92102

   2.473   78.144       736363.   .1457E+05      70480.        3.935        2263.        1.19   329088.3      .92475

   2.856   92.936       734446.   .1649E+05      72231.        4.103        2363.        1.05   318336.1      .92861

   3.270   109.58       732434.   .1850E+05      73982.        4.278        2467.         .94   308253.9      .93552

   3.716   128.34       730311.   .2063E+05      75733.        4.460        2574.         .83   298028.9      .94674

   4.203   149.69       728050.   .2289E+05      77484.        4.649        2687.         .72   285739.1      .96103

   4.742   174.32       725620.   .2532E+05      79235.        4.845        2804.         .62   273277.2      .97736

   5.340   202.47       722993.   .2794E+05      80986.        5.049        2925.         .54   260966.1      .99672

   6.006   236.05       720144.   .3079E+05      82737.        5.262        3052.         .46   249635.0     1.0149

   6.746   274.53       717056.   .3388E+05      84488.        5.482        3184.         .40   239132.9     1.0338

   7.574   319.41       713689.   .3725E+05      86239.        5.712        3321.         .34   228396.6     1.0551

   8.508   372.25       709982.   .4096E+05      87990.        5.950        3464.         .31   218150.3     1.0782
21. ****** XCLECT END    OPTION   1 ******
                      WT    =   .70998E+06      H     =   87992.        AM    =   5.9500

                      TIME  =   .31336          RANGE =   153.47        FUEL  =   14019.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   27.315          CPU TIME USED IN PREVIOUS TASK =   1.4622

 RGSAVE
ITZ          WT            H             AM        TAC***           FUEL        RUN***          XNZZ    EIG   ?11 OPTION
161    .7100E+06    .8799E+05   5.950        .7.19          .4096E+05    372.2        1.000         -0.     0.      1


UNPACK        111     51101          5          1          1          0          0.          1
  5.9900      99120.     0.            4.0000      0.                51100 0.                      1 0.             1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.21.30.          PAGE   38

                                         LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                         ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                         FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                             LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT       FUEL          ALTITUDE      MACH NO.    V (KNOTS)   GAMTD        NET THRUST      SFC

    0.000   0.              709982.   0.              87990.         5.950        3464.        3.17   216013.0         1.0782

     .029    1.6516         709871.    111.0          88546.         5.952        3466.        3.13   213260.3         1.0777

     .058    3.3535         709759.    223.3          89103.         5.954        3469.        3.03   209463.3         1.0772

     .089    5.1085         709645.    336.8          89659.         5.956        3471.        2.94   205771.3         1.0768

     .120    6.9193         709530.    451.8          90216.         5.958        3474.        2.85   202178.7         1.0764

     .152    8.7890         709414.    568.4          90772.         5.960        3476.        2.76   198685.0         1.0760

     .186   10.721          709295.    686.6          91329.         5.962        3479.        2.67   195289.3         1.0756

     .220   12.719          709175.    806.6          91885.         5.964        3481.        2.58   191985.9         1.0751

     .256   14.787          709053.    928.6          92442.         5.966        3484.        2.49   188773.0         1.0747

     .293   16.929          708929.   1053.           92998.         5.968        3486.        2.40   185650.5         1.0743

     .331   19.152          708803.   1179.           93555.         5.970        3489.        2.31   182613.5         1.0739

     .371   21.459          708674.   1308.           94111.         5.972        3491.        2.23   179660.7         1.0736

     .412   23.859          708542.   1440.           94668.         5.974        3494.        2.14   176789.7         1.0732

     .455   26.356          708407.   1575.           95224.         5.976        3496.        2.06   173998.3         1.0728

     .499   28.961          708268.   1714.           95781.         5.978        3499.        1.97   171284.4         1.0724

     .546   31.681          708126.   1856.           96337.         5.980        3501.        1.88   168645.8         1.0721

     .595   34.528          707979.   2003.           96894.         5.982        3503.        1.80   166080.6         1.0717

     .646   37.513          707828.   2154.           97450.         5.984        3506.        1.71   163586.6         1.0714

     .700   40.650          707672.   2310.           98007.         5.986        3508.        1.63   161161.8         1.0710

     .756   43.956          707510.   2472.           98563.         5.988        3511.        1.54   158804.3         1.0707

     .816   47.450          707342.   2640.           99120.         5.990        3513.        1.50   156512.2         1.0704
22. ****** XCLECT END     OPTION    1 ******
                   WT     =    .70734E+06     H      =    99120.        AM     =    5.9900

                   TIME   =    .45516         RANGE  =    525.72        FUEL   =    40955.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    29.059          CPU TIME USED IN PREVIOUS TASK =    1.7440

 RGSAVE
IT?          WT            H               AM        TAC***         FUEL       RUN***          XNZZ    E10    E11 OPTION
111    .7073E+06    .9912E+05    5.990           .1360E-01     2640.          47.45          1.000      -0.     0.      1


UNPACK         121      51130            5            1            1            0          0.          21
  5.0000        .40000        6.0000        0.            -99120.            51100 0.                       21 0.           1111111111
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                RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER

RAMJET GROSS THRUST - - - - - - - - - - - - -      39864.4      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -          39726.9      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - - - -      403.732      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - - - -      11.7890      (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - - - -      3381.50      (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - - -          1.000      (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - - - -      99120.0      (FEET)
SCALING MACH NUMBER - - - - - - - - - - - - -        6.000      (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - - - -      404.951      (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - - - -      5.22573      (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - - - -75.000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - - - -     6.00000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -         39726.9      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - - -        3287.01      (LB)
INLET SPILLAGE DRAG - - - - - - - - - - - - - 0.                 (LB)
ENGINE INLET AREA - - - - - - - - - - - - - -       39.749      (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - - - -         .997      (NO UNITS)
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      HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.21.55.          PAGE   39

                                        LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                  CLIMB PATH HISTORY

  TIME         RANGE         WEIGHT      FUEL          ALTITUDE      MACH NO.    V (KNOTS)   GAMPD         NET THRUST         SFC

     0.000   0.                530000.   0.               99178.         5.105        3241.         7.04  -11116.98         -.12043

      .393    19.342           529993.    7.102          113645.         4.889        2895.         3.18  -11349.16         -.769780E-01

      .752    36.367           529988.   12.27           112413.         4.741        2885.        -8.08  -12009.91         -.710190E-01

     1.105    56.038           529977.   22.94            79288.         4.911        2842.        -7.97  -12719.16         -.28260

     1.532    72.170           529962.   37.86            78502.         4.753        2749.         6.67  -12475.05         -.20678

     1.995    91.953           529951.   49.38           108321.         4.271        2528.         5.12  -9503.414         -.877310E-01

     2.424   109.52            529944.   55.85           101707.         4.156        2441.        -3.38  -10321.31         -.965010E-01

     2.907   120.90            529935.   64.64            94753.         4.035        2362.        -3.15  -9752.509         -.12809

     3.429   149.19            529924.   75.98            88128.         3.909        2276.        -3.14  -9578.303         -.14929

     3.995   160.74            529914.   85.99            81486.         3.776        2189.         1.01  -9776.294         -.10131

     4.579   190.31            529896.  103.6             97106.         3.370        1974.         1.40  -8246.268         -.11192

     5.230   211.49            529885.  115.0             89508.         3.236        1885.        -3.78  -8908.915         -.13064

     5.967   233.20            529869.  131.1             79994.         3.093        1791.         -.31  -9214.634         -.16919

     6.669   253.65            529848.  152.3             86634.         2.727        1586.         2.18  -7282.287         -.21089

     7.444   272.92            529833.  167.3             88799.         2.383        1388.          .07  -6970.470         -.13062

     8.423   294.84            529820.  179.8             86747.         2.058        1197.        -3.29  -7961.976         -.805950E-01

     9.625   316.95            529805.  195.3             72961.         1.985        1098.        -4.33  -10815.36         -.910910E-01

    11.007   340.19            529784.  216.0             65536.         1.592         912.        -4.60  -12520.09         -.600570E-01

    12.475   360.45            529763.  236.9             54750.         1.277         732.        -4.34  -20806.65         -.305060E-01

    14.085   383.21            529736.  263.8             45955.          .775         444.        -4.42   786.7633         .01186

    20.597   422.11            529649.  350.6             24476.          .621         375.        -3.30   1993.395         .03267

    24.641   451.42            526833.  3167.             20000.          .800         491.        -1.44   61792.42         .76934
  26. ****** XCLECT END     OPTION    1 ******
                             WT     =   .52683E+06     H     =    20000.         AM     =   .80000

                             TIME   =   2.1122         RANGE =    5946.0         FUEL   =   .17734E+06

 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    37.675           CPU TIME USED IN PREVIOUS TASK =   0.2460

  OGSAVE
 IT2             WT              H               AM        TAC***         FUEL        RUN***          XNZ2    E10    E11 OPTION
 191    .52680E+06    .20000E+05    .80000        .4107         3167.         451.4         1.000        -0.     0.      1

 UNPACK        161       51010          5          1          0         10          10.          17
  0.           0.           0.            5.0000      1.0000             51010  2.0000               17 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                            01/14/77           10.21.57.          PAGE   48

                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                              LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME          RANGE          WEIGHT        FUEL          ALTITUDE       MACH NO.     V (KNOTS)    GAMTD         NET THRUST         SFC
    0.000    0.                 522874.    0.                20000.           .800          491.         19.06   221295.2          .78891
     .077    .59492             522677.    197.2             21250.           .800          489.         18.40   212227.0          .78724
     .158    1.2222             522478.    395.8             22500.           .800          486.         17.69   203178.6          .78561
     .244    1.8851             522277.    596.3             23750.           .800          484.         16.78   194422.8          .78397
     .335    2.5865             522075.    798.6             25000.           .800          481.         15.90   185479.6          .78248
     .432    3.3299             521871.    1004.             26250.           .800          479.         15.03   177695.8          .78077
     .534    4.1192             521662.    1211.             27500.           .800          476.         14.18   169691.5          .69916
     .643    4.9589             521452.    1422.             28750.           .800          474.         13.33   161963.8          .69737
     .761    5.8629             521237.    1636.             30000.           .800          471.         12.36   153218.4          .69284
     .888    6.8398             521019.    1855.             31250.           .800          469.         11.40   144871.1          .68665
    1.028    7.9136             520795.    2078.             32500.           .800          466.         10.47   136823.4          .68126
    1.180    9.0674             520566.    2308.             33750.           .800          463.          9.59   129224.7          .67583
    1.348    10.347             520329.    2545.             35000.           .800          461.          8.66   122376.1          .67175
    1.537    11.777             520078.    2796.             36250.           .800          459.          7.51   115755.5          .66888
    1.762    13.486             519796.    3078.             37500.           .800          459.          6.49   109013.4          .66809
    2.016    15.416             519498.    3376.             38750.           .800          459.          5.73   102663.7          .66820
    2.313    17.601             519179.    3695.             40000.           .800          459.          5.05   96681.73          .66831
    2.636    20.133             518831.    4042.             41250.           .800          459.          4.29   91046.51          .66845
    3.027    23.115             518446.    4427.             42500.           .800          459.          3.66   85738.26          .66868
    3.500    26.727             518008.    4866.             43750.           .800          459.          2.92   80737.51          .66878
    4.096    31.277             517487.    5386.             45000.           .800          459.          2.59   76626.28          .66898
 20.  ****** SELECT END     OPTION   1 ******
                          WT     =   .51749E+06      H      =   45000.          AM     =   .80000

                          TIME   =   2.6062          RANGE  =   6397.4          FUEL   =   3959.3

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    38.865          CPU TIME USED IN PREVIOUS TASK =    1.1506

 RGSAVE
ITZ            WT              H             AM        TAC***         FUEL        RUN***          XNZZ    E10    E11 OPTION
171    .5175E+06    .4500E+05    .8000          .6827E-01    5386.          31.28          1.000          -0.     0.      1


UNPACK          181      51017          5          1          3          10          10.          7
 0.             0.             0.            1.0000        200.20             51018 0.                      7 0.               1111111111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.22.07.          PAGE   41

                                              LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

 SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

  THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                 CLIMB PATH HISTORY

   TIME        RANGE        WEIGHT     FUEL        ALTITUDE    MACH NO.   V (KNOTS)  GAM7D      NET THRUST       SFC

     0.000   0.             502570.   0.            45000.        .800        459.       -1.90  739.5932        .80121

      .243    1.8323        502568.    2.402        44631.        .764        434.       -3.51  729.2391        .79838

      .497    3.6531        502565.    4.893        43638.        .756        433.       -5.09  759.0360        .79763

      .755    5.4970        502563.    7.547        42646.        .747        428.      -10.09  790.4142        .79660

     1.015    7.3848        502560.    10.60        39546.        .831        476.       -9.00  930.6716        .81136

     1.258    9.2936        502556.    13.93        38604.        .821        470.       -4.50  1030.502        .80827

     1.510    11.254        502553.    17.48        37662.        .811        465.       -4.46  1065.420        .80425

     1.773    13.271        502549.    21.28        36719.        .800        459.       -4.35  1101.411        .80013

     2.045    15.332        502545.    25.35        35777.        .789        453.       -4.31  1130.607        .80064

     2.320    17.388        502541.    29.59        34835.        .775        447.       -4.31  1172.742        .80314

     2.599    19.447        502536.    34.05        33893.        .761        441.       -4.30  1206.904        .80573

     2.883    21.516        502532.    38.72        32950.        .748        435.       -4.29  1242.250        .80824

     3.171    23.577        502527.    43.62        32008.        .734        428.       -4.28  1278.543        .81070

     3.464    25.647        502521.    48.76        31066.        .720        422.       -4.28  1315.597        .81337

     3.762    27.721        502516.    54.17        30124.        .706        416.       -4.27  1355.676        .81647

     4.065    29.799        502510.    59.86        29182.        .692        409.       -4.26  1396.500        .81954

     4.374    31.881        502504.    65.84        28239.        .678        402.       -4.25  1438.113        .82250

     4.689    33.968        502498.    72.15        27297.        .664        396.       -4.24  1480.934        .82555

     5.009    36.058        502491.    78.80        26355.        .650        389.       -4.23  1525.249        .82843

     5.337    38.153        502484.    85.80        25413.        .636        382.       -4.23  1570.178        .83129

     5.671    40.253        502477.    93.19        24470.        .621        375.       -2.83  1616.374        .83400

     9.714    69.559        499698.    2873.        20000.        .800        491.       -1.44  60326.60        .78065

  30. ****** XCLECT END     OPTION   1 ******
                              WT     =   .49970E+06     H      =   20000.        AM     =   .80000

                              TIME   =   3.1107        RANGE =    6620.7        FUEL   =   14917.

 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =   43.873          CPU TIME USED IN PREVIOUS TASK =   4.7100

  RGSAVE
 ITZ          WT            H              AM       TAC***          FUEL       RUN***         XNZZ   E10   E11 OPTION
 191   .4997E+06   .2000E+05   .8000         .1619         2873.      69.56         1.000     -0.    0.      1

 UNPACK        201      51010          5          1          3          10         10.        17
  0.           0.            0.            5.0000      1.0000            51010  2.0000               17 0.            1111111111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77           10.22.17.          PAGE  42

                                              LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                     CLIMB PATH HISTORY

  TIME        RANGE         WEIGHT      FUEL          ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST       SFC

    0.000   0.                495777.   0.               20000.        .803         491.       13.83   2149.716        .04809

     .309    2.1913           495769.    8.433           23280.        .603         365.        4.82   1718.297        .04049

     .755    4.8606           495758.    19.07           22089.        .585         356.       -4.19   1739.287        .04069

    1.213    7.5376           495746.    31.44           20898.        .566         346.       -4.18   1795.547        .04142

    1.687    10.222           495734.    42.56           19708.        .547         336.       -4.17   1853.176        .04207

    2.176    12.913           495721.    55.49           18517.        .528         326.       -4.16   1913.537        .04250

    2.682    15.611           495708.    69.32           17326.        .508         315.       -4.15   1975.411        .04283

    3.287    18.312           495693.    84.12           16136.        .488         304.       -4.15   2039.266        .04302

    3.752    21.013           495677.    99.98           14945.        .467         293.       -5.56   2104.766        .04309

    4.292    23.714           495660.    116.6           12935.        .494         312.       -5.43   2272.674        .04764

    4.828    26.435           495643.    134.1           11915.        .471         298.       -4.03   2336.308        .04709

    5.390    29.168           495624.    152.9           10599.        .452         288.       -4.36   2411.805        .04723

    5.971    31.910           495604.    173.1            9275.        .439         281.       -4.60   2501.097        .04787

    6.566    34.660           495582.    194.5            7914.        .429         275.       -4.61   2599.757        .04865

    7.175    37.418           495560.    217.4            6573.        .417         269.       -4.66   2698.272        .04920

    7.800    40.184           495535.    241.7            5209.        .406         264.       -4.63   2802.366        .04991

    8.441    42.959           495509.    267.6            3847.        .396         258.       -4.61   2907.805        .05099

    9.090    45.743           495482.    295.2            2485.        .385         252.       -4.62   3013.317        .05204

    9.771    48.537           495452.    324.6            1105.        .375         247.       -4.16   3125.859        .05436

   10.401    51.329           495420.    356.5              50.        .342         226.       -1.70   3198.471        .05234

   10.711    51.716           495410.    366.6              50.        .200         132.        0.00   1616.374        .03408
 32. ****** XCLECT END     OPTION   1 ******
                      WT     =   .49541E+06     H      =    50.000         AM     =   .20000

                      TIME   =   3.3559         RANGE =    6698.2          FUEL   =   3920.7

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    48.769          CPU TIME USED IN PREVIOUS TASK =    4.0580

 RGSAVE
ITZ         WT              H             AM       TAC***          FUEL        RUN***         XNZZ    E10    E11 OPTION
211    .4954E+06    50.00        .2000        .1824         366.6       52.10          1.000        -0.     0.      1


UNPACK        221     51210           5          1          2         10       10.        22
  1.0000        2.0000        7350.0       4.0000       20.000            51210 0.                        22  2.0000       1111111111
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            NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                             01/14/77           10.22.10.          PAGE   43

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                   MISSION SEGMENT TABLE

          .20000      0.          .81500E+06  6.0100      1200.0      .50000E-01  1.0000      100.00            0
  2      4.0000      .40000      6.0000      .32660E+06  99120.           51000 0.                    21       0  1111111111
  3      0.          0.          0.          5.0000      2.0000           51000  2.0000               17       0  1111111111
  4      0.          0.          .82998E+06 0.           0.               51000 0.                    13       0  1111111111
  5       .50000     3000.0      0.          4.0000      0.               51100 0.                     1       0  1111111111
  6       .66000     5000.0      0.          4.0000      0.               51100 0.                     1       0  1111111111
  7       .80000     21500.      0.          4.0000      0.               51100 0.                     1       0  1111111111
  8       .95000     29000.      0.          4.0000      0.               51100 0.                     1       0  1111111111
  9      1.5000      40500.      0.          4.0000      0.               51100 0.                     1       0  1111111111
 10      2.6000      52971.      0.          4.0000      0.               51100 0.                     1       0  1111111111
 11      5.9500      87990.      0.          5.0000      0.               51100 0.                     1       0  1111111111
 12      5.9900      99120.      0.          4.0000      0.               51100 0.                     1       0  1111111111
 13      5.0000      .40000      6.0000      0.          -99120.          51100 0.                    21       0  1111111111
 14      0.          0.          0.          5.0000      12.000           51100 0.                    22       X  1111111111
 15      0.          0.          .53000E+06 0.           0.               51010  1.0000                6       0  1111111111
 16       .80000     20000.      3.0000      1.0000      0.               51210 0.                     1       0  1111111111
 17      0.          0.          0.          5.0000      1.0000           51010  2.0000               17       0  1111111111
 18       .83000     45000.      3.0000      4.0000      0.               51110 0.                     1       0  1111111111
 19      0.          0.          0.          1.0000      200.00           51010 0.                     7       0  1111111111
 20       .80000     20000.      3.0000      1.0000      0.               51210 0.                     1       0  1111111111
 21      0.          0.          0.          5.0000      1.0000           51010  2.0000               17       0  1111111111
 22       .20000     50.000      3.0000      1.0000      0.               51210 0.                     1       0  1111111111
 23      1.0000      2.0000      7350.0      4.0000      20.000           51210 0.                    22       X  1111111111
 24      0.          0.          0.          0.          1.0000           51210  4.0000               17       0  1111111111
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                                                  LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                  ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


 DUMPRG

SEG      WT            H               AM         TIME           FUEL        RANGE          XNZZ       E10    E11  OPTION
  1   .8150E+06  0.               .2000      0.             0.          0.               1.000       0.     0.      X
  2   .8150E+06  0.               .2000      0.             0.          0.               1.000      -0.     0.     21
  3   .8134E+06   50.00           .2064       .8333E-01     1610.       0.               1.000      -0.     0.     17
  4   .8000E+06   50.00           .2064      0.             0.          0.               1.000      -0.     0.     13
  5   .7955E+06   3000.           .5000       .2039E-01     4527.        4.361           1.000      -0.     0.      1
  6   .7941E+06   5000.           .6000       .6200E-02     1397.        2.196           1.000      -0.     0.      1
  7   .7879E+06   .2150E+05       .8000       .3407E-01     6223.        14.05           1.000      -0.     0.      1
  8   .7836E+06   .2900E+05       .9500       .2408E-01     4273.        12.69           1.000      -0.     0.      1
  9   .7650E+06   .4050E+05      1.500        .1012         .1962E+05    69.55           1.000      -0.     0.      1
 10   .7509E+06   .5297E+05      2.600        .4410E-01     .1402E+05    49.83           1.000      -0.     0.      1
 11   .7100E+06   .8799E+05      5.950        .1418         .4096E+05    372.2           1.000      -0.     0.      1
 12   .7073E+06   .9912E+05      5.990        .1360E-01     2640.        47.45           1.000      -0.     0.      1
 13   .7073E+06   .9912E+05      5.990       0.             2640.       0.               1.000      -0.     0.     21
 14   .7073E+06   .9912E+05      5.990       0.             2640.       0.               1.000      -0.     0.     22
 15   .5300E+06   .9912E+05      5.145        1.643         .1773E+06    5373.           1.000      -0.     0.      6
 16   .5269E+06   .2600E+05       .8600       .4107         3167.        451.4           1.000      -0.     0.      1
 17   .5229E+06   .2000E+05       .8000       .8333E-01     3959.       0.               1.000      -0.     0.     17
 18   .5175E+06   .4500E+05       .8000       .6827E-01     5306.        31.29           1.000      -0.     0.      1
 19   .5026E+06   .4500E+05       .8000       .4362         .1492E+05    200.0           1.000      -0.     0.      7
 20   .4997E+06   .2000E+05       .8000       .1619         2873.        69.56           1.000      -0.     0.      1
 21   .4959E+06   .2000E+05       .8000       .8333E-01     3921.       0.               1.000      -0.     0.     17
 22   .4954E+06   50.00           .2000       .1024         366.6        52.13           1.000      -0.     0.      1
 23 -0.             -0.             -0.          -0.           -0.         -0.            -0.                  1.    -0.     -0
 24 -0.             -0.             -0.          -0.           -0.         -0.            -0.                 -0.    -0.     -0
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                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                             LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME         RANGE        WEIGHT      FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAM7D        NET THRUST        SFC

     0.000   0.             829983.    0.                 50.          .206          136.         3.09   303009.6          .73107

      .152    .35647        829422.     560.9            197.          .221          146.         4.31   304207.6          .72740

      .269    .64999        828990.     993.3            345.          .236          156.         5.02   306783.1          .72120

      .367    .91055        828629.    1354.             492.          .250          165.         5.53   308267.1          .71716

      .453   1.1518         828314.    1669.             640.          .265          175.         5.89   309273.6          .71459

      .530   1.3812         828030.    1953.             788.          .280          184.         6.14   309914.7          .71304

      .600   1.6030         827776.    2214.             935.          .294          194.         6.31   310310.7          .71219

      .666   1.8203         827526.    2457.            1082.          .309          204.         6.40   310542.5          .71180

      .729   2.0353         827297.    2687.            1230.          .324          213.         6.45   310624.8          .71201

      .788   2.2493         827078.    2905.            1377.          .339          223.         6.47   310687.3          .71240

      .845   2.4634         826868.    3115.            1525.          .353          232.         6.45   310732.4          .71297

      .900   2.6787         826666.    3317.            1672.          .368          242.         6.42   310781.8          .71369

      .953   2.8945         826470.    3513.            1820.          .383          251.         6.37   310851.2          .71450

     1.004   3.1128         826280.    3704.            1967.          .397          261.         6.31   310951.8          .71538

     1.054   3.3333         826094.    3890.            2115.          .412          270.         6.24   311094.1          .71632

     1.103   3.5564         825912.    4072.            2262.          .427          280.         6.17   311281.7          .71728

     1.151   3.7825         825733.    4250.            2410.          .441          289.         6.08   311510.6          .71827

     1.198   4.0117         825557.    4426.            2557.          .456          299.         6.00   311810.6          .71927

     1.244   4.2442         825384.    4599.            2705.          .471          308.         5.91   312175.1          .72010

     1.290   4.4802         825214.    4770.            2852.          .485          318.         5.82   312585.4          .72117

     1.335   4.7199         825045.    4938.            3000.          .500          327.         5.78   313053.6          .72215
 35. ****** KCLECT END     OPTICN   1 ******
                   WT     =   .82504E+06     H     =   3000.0         AM    =   .50003

                   TIME   =   .83333E-01     RANGE =  0.              FUEL  =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    50.071          CPU TIME USED IN PREVIOUS TASK =   1.1160

 RGSAVE
ITZ          WT              H            AM       TAC***          FUEL       RUN***         XNZZ    E10   E11 OPTION
 41   .8250E+06   3000.        .5000      .2225E-01   4938.        4.720        1.000      -0.    0.     1

UNPACK        51     51100          5         1         1          0         0.         1
  .60000      5000.0      0.           4.0000      0.              51100 0.                        1 0.           1111111111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77          10.22.22.         PAGE   46

                                         LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                         ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                         FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                              LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL        ALTITUDE    MACH NO.    V (KNOTS)   GAMFD       NET THRUST      SFC

     0.000   0.               825045.   0.              3000.        .500         327.        8.56   313075.7       .72210

      .020    .10928          824969.    76.00          3100.        .505         330.        8.54   312817.6       .72233

      .040    .21916          824893.   151.6           3200.        .510         333.        8.49   312565.6       .72257

      .060    .32965          824818.   226.9           3300.        .515         337.        8.44   312322.0       .72280

      .080    .44074          824743.   301.9           3400.        .520         340.        8.40   312089.0       .72303

      .100    .55244          824668.   376.5           3500.        .525         343.        8.35   311864.3       .72325

      .120    .66476          824594.   450.9           3600.        .530         346.        8.31   311640.7       .72348

      .140    .77769          824520.   524.9           3700.        .535         349.        8.26   311442.1       .72369

      .159    .89126          824446.   598.6           3800.        .540         352.        8.22   311244.5       .72390

      .179   1.0054           824373.   672.1           3900.        .545         355.        8.17   311037.8       .72412

      .198   1.1203           824300.   745.3           4000.        .550         359.        8.13   310820.7       .72434

      .218   1.2358           824227.   818.2           4100.        .555         362.        8.08   310640.0       .72455

      .237   1.3519           824154.   890.8           4200.        .560         365.        8.04   310461.9       .72476

      .256   1.4687           824082.   963.3           4300.        .565         368.        7.99   310292.1       .72496

      .276   1.5861           824009.   1035.           4400.        .570         371.        7.95   310131.3       .72515

      .295   1.7042           823938.   1107.           4500.        .575         374.        7.91   309979.5       .72534

      .314   1.8229           823866.   1179.           4600.        .580         377.        7.86   309836.6       .72553

      .333   1.9423           823794.   1251.           4700.        .585         380.        7.82   309702.5       .72571

      .352   2.0624           823723.   1322.           4800.        .590         384.        7.78   309577.4       .72589

      .371   2.1831           823652.   1393.           4900.        .595         387.        7.74   309461.0        72606

      .390   2.3045           823581.   1464.           5000.        .600         390.        7.72   309353.4       .72623
 36. ****** XCLECT END     OPTION   1 ******
                         WT    =   .82358E+06     H     =   5000.0        AM    =   .60000

                         TIME  =   .10550         RANGE =   4.7199        FUEL  =   4930.4

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   51.215          CPU TIME USED IN PREVIOUS TASK =   1.1440

 RGSAVE
ITZ          WT            H           AM        TAC***         FUEL       RUN***         XNZZ   E16   E11 OPTION
 91   .8236E+06    5000.        .6000       .6500E-02   1464.       2.305        1.000       -0.    0.     1


UNPACK         61     51100          5          1        1         0         0.          1
  .00000       21500.     0.           4.0000     3.                  51100 0.                     1 0.           1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77            10.22.25.           PAGE   47

                                    LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                    ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                    FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE          WEIGHT       FUEL          ALTITUDE     MACH NO.     V (KNOTS)   GAM7D         NET THRUST        SFC

   0.000   0.              823581.   0.                 5000.          .600         390.        13.00   309352.2         .72624

    .092    .58792         823239.    342.0             5825.          .610         395.        12.82   303650.9         .72530

    .186   1.1923          822899.    681.7             6650.          .620         400.        12.49   298180.1         .72430

    .280   1.8136          822562.   1019.              7475.          .630         406.        12.15   292650.2         .72335

    .376   2.4525          822227.   1354.              8300.          .640         411.        11.83   287265.7         .72235

    .474   3.1094          821893.   1688.              9125.          .650         416.        11.52   281981.9         .72131

    .572   3.7848          821562.   2019.              9950.          .660         421.        11.21   276721.1         .72029

    .673   4.4794          821232.   2349.             10775.          .670         426.        10.91   271639.0         .71918

    .774   5.1936          820904.   2677.             11600.          .680         431.        10.61   266592.4         .71808

    .878   5.9281          820578.   3003.             12425.          .690         436.        10.32   261640.8         .71694

    .983   6.6839          820253.   3328.             13250.          .700         441.        10.04   256653.1         .71605

   1.090   7.4619          819929.   3652.             14075.          .710         446.         9.75   251671.3         .71529

   1.198   8.2634          819606.   3975.             14900.          .720         451.         9.47   246810.2         .71447

   1.309   9.0888          819284.   4297.             15725.          .730         456.         9.20   242001.1         .71364

   1.422   9.9392          818963.   4618.             16550.          .740         461.         8.93   237284.4         .71274

   1.537   10.816          818642.   4939.             17375.          .750         465.         8.67   232602.8         .71192

   1.654   11.719          818322.   5259.             18200.          .760         470.         8.41   227999.2         .71104

   1.774   12.651          818002.   5579.             19025.          .770         475.         8.16   223465.4         .71013

   1.896   13.612          817683.   5898.             19850.          .780         479.         7.92   219040.1         .70917

   2.021   14.603          817363.   6218.             20675.          .790         484.         7.67   214706.1         .70817

   2.148   15.627          817044.   6537.             21500.          .800         488.         7.55   210322.3         .70717
 37. ****** XCLECT END     OPTION   1 ******
                    WT     =   .81704E+06     H     =   21500.        AM     =   .80000

                    TIME   =   .11208         RANGE =   7.0244        FUEL   =   1463.9

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    52.305           CPU TIME USED IN PREVIOUS TASK =    1.1700

 RGSAVE
ITZ          WT            H            AM        TAC***        FUEL       RUN***         XNZZ    E10    E11 OPTION
 61   .8170E+06   .2150E+05   .8000           .3500E-01   6537.        15.63         1.000         -0.     0.     1


UNPACK         71     51100          5          1         1          0         0.          1
  .95000       29000.      0.              4.0000     0.             51100 0.                      1 0.            1111111111
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    NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/14/77            10.22.27.          PAGE   40

                                                   LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                   ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                   FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME          RANGE          WEIGHT      FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAMD           NET THRUST       SFC

    0.000   0.              817044.   0.              21500.          .800          488.          7.07   210310.5        .78719

     .061    .49702         816856.    187.7          21875.          .807          492.          7.13   231214.1        .04454

     .121    .98644         816662.    381.9          22250.          .815          496.          7.09   229655.8        .04274

     .182   1.4888          816466.    577.8          22625.          .822          500.          6.91   228088.9        .04094

     .244   2.0046          816268.    775.5          23000.          .830          503.          6.73   226535.1        .03910

     .308   2.5344          816068.    975.3          23375.          .837          507.          6.55   225018.5        .03722

     .372   3.0791          815866.   1177.           23750.          .845          511.          6.37   223464.9        .03539

     .438   3.6395          815662.   1382.           24125.          .852          515.          6.19   221911.1        .03356

     .506   4.2164          815455.   1588.           24500.          .860          518.          6.01   220304.9        .03169

     .575   4.8105          815246.   1798.           24875.          .867          522.          5.84   218891.7        .02978

     .645   5.4228          815033.   2010.           25250.          .875          526.          5.66   217396.5        .02791

     .717   6.0544          814818.   2226.           25625.          .882          529.          5.49   215914.3        .02601

     .791   6.7061          814599.   2444.           26000.          .890          533.          5.32   214465.7        .02407

     .867   7.3790          814377.   2667.           26375.          .897          537.          5.13   213025.3        .02211

     .945   8.0793          814150.   2894.           26750.          .905          540.          4.89   211540.4        .02010

    1.028   8.8222          813912.   3132.           27125.          .912          544.          4.60   210004.4        .01821

    1.115   9.6146          813663.   3381.           27500.          .920          548.          4.30   208655.5        .01620

    1.208  10.463           813401.   3643.           27875.          .927          551.          4.01   207227.0        .01421

    1.307  11.376           813123.   3921.           28250.          .935          555.          3.72   205795.6        .01224

    1.414  12.363           812827.   4216.           28625.          .942          558.          3.43   204390.0        .01024

    1.529  13.436           812511.   4533.           29000.          .950          562.          3.29   203010.9        .00820
 30. ****** XCLECT END     OPTION   1 ******
                      WT     =   .81251E+06     H      =   29000.         AM     =   .95000

                      TIME   =   .14700         RANGE  =   22.651         FUEL   =   6537.4

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    53.569          CPU TIME USED IN PREVIOUS TASK =   1.1040

 RGSAVE
ITZ          WT             H          AM        TAC***         FUEL       RUN***          XNZZ    E10    E11 OPTION
 71    .8125E+06    .2900E+05    .9500        .2540E-01    4533.         13.44         1.000        -0.     0.      1


UNPACK          61      51100          5          1          1          0          0.          1
  1.5000        40500.       0.            4.0000      0.                 51100 0.                         1 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77          16.22.31.          PAGE   49

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                           LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE       WEIGHT     FUEL         ALTITUDE    MACH NO.    V (KNOTS)   GAM7D        NET THRUST      SFC

    0.000   0.            812511.   0.             29000.       .950         562.        1.05   203010.4       .80028

     .309    2.9326       811661.    849.9         29575.       .977         577.        1.69   205329.0       .80864

     .674    6.4067       810644.   1867.          30150.      1.005         592.        1.42   207106.3       .81155

    1.096   10.592        809484.   3027.          30725.      1.032         606.        1.26   206017.1       .82624

    1.529   15.120        808217.   4294.          31300.      1.060         621.        1.14   205100.1       .84017

    2.000   20.136        806833.   5677.          31875.      1.087         635.        1.11   204612.0       .85320

    2.458   24.869        805536.   6975.          32450.      1.115         650.        1.15   204360.0       .85852

    2.877   29.537        804269.   8242.          33025.      1.142         664.        1.10   204730.6       .87673

    3.279   34.038        803056.   9454.          33600.      1.170         678.        1.24   202442.0       .89029

    3.649   38.262        801920.   .1059E+05      34175.      1.197         692.        1.30   200064.0       .91710

    4.001   42.360        800841.   .1167E+05      34750.      1.225         706.        1.31   199910.6       .93370

    4.353   46.545        799739.   .1277E+05      35325.      1.252         720.        1.29   199351.3       .96042

    4.702   50.776        798633.   .1388E+05      35900.      1.280         734.        1.24   199271.7       .96119

    5.065   55.269        797463.   .1505E+05      36475.      1.307         749.        1.34   199734.2       .97509

    5.356   58.936        796510.   .1600E+05      37050.      1.335         765.        1.62   219779.1       .98362

    5.596   61.997        795716.   .1680E+05      37625.      1.362         781.        1.84   226520.0       .89326

    5.829   64.838        794902.   .1761E+05      38200.      1.390         797.        1.97   232250.1       .88737

    6.000   67.493        794293.   .1822E+05      38775.      1.417         813.        2.00   237546.0       .88346

    6.194   70.034        793637.   .1887E+05      39350.      1.445         829.        2.10   242466.3       .88113

    6.359   72.472        793010.   .1950E+05      39925.      1.472         844.        2.27   247357.1       .87905

    6.534   74.814        792405.   .2011E+05      40500.      1.500         860.        2.31   252267.5       .87702
 39. ****** XCLECT END    OPTION   1 ******
                        WT    =   .79240E+06     H     =   40500.         AM    =   1.5000

                        TIME  =   .17336         RANGE =   36.097         FUEL  =   4532.7

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   55.243          CPU TIME USED IN PREVIOUS TASK =   1.6740

 RGSAVE
ITZ          WT            H            AM       TAC***        FUEL       RUN***         XNZZ   E10   E11 OPTION
 01   .7924E+06   .4050E+05   1.500       .1009       .2011E+05   74.81        1.000      -0.    0.     1


UNPACK         91     51100          5          1          1          0         0.          1
  2.6000       52971.      0.           4.0000      0.                    51100 0.                     1 0.           1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.22.35.          PAGE   58

                                     LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                     ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                     FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                        LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME       RANGE       WEIGHT     FUEL        ALTITUDE    MACH NO.   V (KNOTS)   GAM7D      NET THRUST      SFC

   0.000   0.            792405.   0.   *        40500.       1.500       860.       1.50   252287.6      .07689

    .255   3.7202        791437.   967.✓         41124.       1.555       891.       1.66   268227.8      .07307

    .479   7.1005        790540.   1865.         41747.       1.610       923.       1.82   284652.1      .06969

    .677   10.282        789701.   2704.         42371.       1.665       954.       1.97   300940.5      .06612

    .855   13.073        788909.   3496.         42994.       1.720       986.       2.12   317466.0      .06360

   1.015   15.744        788159.   4245.         43618.       1.775      1017.       2.28   334519.2      .06050

   1.160   18.239        787447.   4958.         44241.       1.830      1049.       2.43   351726.1      .05707

   1.293   20.505        786767.   5638.         44865.       1.885      1080.       2.58   369156.2      .05532

   1.414   22.796        786115.   6290.         45488.       1.940      1112.       2.72   386098.8      .05296

   1.526   24.906        785487.   6918.         46112.       1.995      1144.       2.78   399098.0      .04893

   1.636   27.017        784863.   7541.         46735.       2.050      1175.       2.76   409604.6      .04641

   1.743   29.156        784229.   8175.         47359.       2.105      1207.       2.73   424104.4      .04515

   1.850   31.316        783585.   8820.         47983.       2.160      1238.       2.70   438219.0      .04390

   1.954   33.500        782931.   9474.         48606.       2.215      1270.       2.66   452300.9      .04204

   2.059   35.734        782263.   .1014E+05     49230.       2.270      1301.       2.56   459604.3      .03924

   2.166   38.087        781571.   .1083E+05     49853.       2.325      1333.       2.43   463077.4      .03706

   2.277   40.500        780851.   .1155E+05     50477.       2.380      1364.       2.29   466519.3      .03608

   2.392   43.224        780107.   .1230E+05     51100.       2.435      1396.       2.17   470392.9      .03370

   2.509   45.984        779327.   .1308E+05     51724.       2.490      1427.       2.14   480022.0      .03250

   2.623   48.722        778599.   .1385E+05     52347.       2.545      1459.       2.22   491241.9      .03072

   2.728   51.289        777842.   .1456E+05     52971.       2.600      1490.       2.29   501322.4      .02896
40. ****** XCLECT END     OPTION   1 ******
                   WT     =   .77784E+06     H     =   52971.         AM    =   2.6000

                   TIME   =   .28227         RANGE =   113.98         FUEL  =   20106.

*** ***  ** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   57.317          CPU TIME USED IN PREVIOUS TASK =   2.0740

 RGSAVE
ITZ          WT            H            AM       TAC***         FUEL        RUN***          XNZZ   E10    E11 OPTION
 91   .7778E+06   .5297E+05   2.600          .4546E-01   .1456E+05   51.29        1.000         -0.    0.      1

UNPACK       101      51100          5          1         1          0          0.         1
  5.9500      87990.      0.              5.0000      0.                 51100 0.                      1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77          10.22.38.          PAGE   51

                                                  LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                  ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                    CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMD          NET THRUST      SFC

   0.000   0.               777842.   0.               52971.       2.600       1490.         3.66   501241.0       .82096

    .178   4.4992           776608.    1234.           54722.       2.695       1545.         3.40   501422.0       .82782

    .368   9.4045           775300.    2542.           56473.       2.811       1611.         3.25   493927.4       .82901

    .556   14.638           774043.    3798.           58224.       2.932       1681.         3.06   474397.0       .82946

    .754   20.279           772772.    5070.           59975.       3.058       1753.         2.63   412804.1       .91990

    .991   27.351           771297.    6544.           61726.       3.190       1828.         2.28   399669.5       .91691

   1.246   35.200           769766.    8076.           63477.       3.327       1907.         1.96   386697.9       .91517

   1.521   44.204           768172.    9670.           65228.       3.470       1989.         1.73   373712.1       .91540

   1.824   54.489           766471.    .1137E+05       66979.       3.619       2076.         1.53   360072.4       .91793

   2.157   66.245           764669.    .1317E+05       68730.       3.774       2168.         1.32   346593.2       .92105

   2.518   79.500           762777.    .1506E+05       70480.       3.935       2263.         1.17   334431.2       .92679

   2.909   94.637           760793.    .1705E+05       72231.       4.103       2363.         1.03   323712.2       .93065

   3.330   111.50           758710.    .1913E+05       73982.       4.278       2467.          .92   313507.0       .93957

   3.784   130.67           756510.    .2133E+05       75733.       4.460       2574.          .81   303321.0       .94679

   4.280   152.40           754168.    .2367E+05       77484.       4.649       2687.          .71   290947.5       .96180

   4.828   177.47           751650.    .2619E+05       79235.       4.845       2804.          .61   278396.1       .97749

   5.436   206.5            748926.    .2892E+05       80986.       5.049       2925.          .53   265994.7       .99679

   6.114   240.27           745971.    .3187E+05       82737.       5.262       3052.          .46   254579.2      1.0150

   6.867   279.40           742767.    .3507E+05       84488.       5.482       3184.          .39   244000.2      1.0339

   7.708   325.02           739273.    .3857E+05       86239.       5.712       3321.          .33   233170.7      1.0552

   8.657   378.6            735428.    .4241E+05       87990.       5.950       3464.          .31   222044.5      1.0703
 41. ****** KOLECT END     OPTION   1 ******
                         WT     =   .73543E+06      H      =   87990.        AM     =   5.9500

                         TIME   =   .32773          RANGE  =   162.19        FUEL   =   14563.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    58.777          CPU TIME USED IN PREVIOUS TASK =   1.4680

 RGSAVE
ITZ          WT              H            AM        TAC***         FUEL       RUN***          XNZZ    E10    E11 OPTION
101   .7354E+06    .8799E+05    5.950        .1443        .4241E+05    378.7          1.000        -0.     0.      1


UNPACK        111      51100          5          1          1          0          0.          1
  5.9900       99120.      0.            4.0000      0.               51100 0.                     1 0.            1111111111
  HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                           01/14/77           10.22.58.          PAGE   52

                                              LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                  LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME         RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAMTD        NET THRUST       SFC

    0.000    0.             735428.    0.             87990.         5.950        3464.         3.12    222699.7       1.0783

     .029     1.6776        735313.     115.2         88546.         5.952        3466.         3.00    217069.4       1.0778

     .059     3.4073        735196.     231.8         89103.         5.954        3469.         2.90    214030.1       1.0774

     .090     5.1921        735078.     349.8         89659.         5.956        3471.         2.89    210312.3       1.0769

     .122     7.0340        734959.     469.5         90216.         5.958        3474.         2.80    206600.6       1.0765

     .155     8.9380        734837.     590.8         90772.         5.960        3476.         2.71    203165.0       1.0761

     .189     10.920        734714.     714.1         91329.         5.962        3479.         2.62    199730.6       1.0757

     .224     12.966        734589.     839.3         91885.         5.964        3481.         2.53    196426.9       1.0753

     .260     15.057        734461.     966.8         92442.         5.966        3484.         2.44    193167.5       1.0749

     .298     17.247        734331.     1097.         92998.         5.968        3486.         2.35    190017.7       1.0745

     .337     19.521        734199.     1229.         93555.         5.970        3489.         2.26    186955.3       1.0741

     .378     21.885        734063.     1365.         94111.         5.972        3491.         2.17    183977.9       1.0737

     .420     24.345        733925.     1503.         94668.         5.974        3494.         2.09    181083.3       1.0733

     .464     26.911        733782.     1646.         95224.         5.976        3496.         2.00    178269.1       1.0730

     .510     29.591        733636.     1792.         95781.         5.978        3499.         1.91    175533.1       1.0726

     .558     32.395        733486.     1942.         96337.         5.980        3501.         1.83    172873.3       1.0723

     .609     35.335        733331.     2097.         96894.         5.982        3503.         1.74    170287.4       1.0719

     .662     38.425        733171.     2257.         97450.         5.984        3506.         1.65    167773.5       1.0716

     .717     41.680        733004.     2424.         98007.         5.986        3508.         1.57    165329.3       1.0713

     .776     45.120        732831.     2597.         98563.         5.988        3511.         1.48    162952.9       1.0709

     .839     48.767        732651.     2777.         99120.         5.990        3513.         1.40    160642.7       1.0706
 42. ****** XCLECT END     OPTION   1 ******
                     WT    =   .73265E+06      H     =    99120.          AM    =    5.9900

                     TIME  =   .47201          RANGE =    540.00          FUEL  =    42414.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    60.527          CPU TIME USED IN PREVIOUS TASK =    1.7500

 RGSAVE
ITZ          WT            H            AM       TAC***         FUEL       RUN***         XHZZ   E10    E11 OPTION
111   .7327E+06   .9912E+05   5.990         .1399E-01   2777.         48.77        1.000        -0.    0.      1


UNPACK        121      51100          5         1         1         0         0.         21
  5.0000      .40000       6.0000      0.          -99120.           51100 0.                   21 0.           1111111111
```

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              RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER

RAMJET GROSS THRUST - - - - - - - - - - - - -   41447.8      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - - -    41293.2      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - - - -   419.760      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - - - -   12.2572      (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - - - -   3381.50      (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - - - -     1.000      (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - - - -   99126.3      (FEET)
SCALING MACH NUMBER - - - - - - - - - - - - -     6.000      (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - - - -   421.133      (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - - - -   5.39972      (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - - -.700000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - - -   6.07000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -     41293.2      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - - -     3466.23      (LB)
INLET SPILLAGE DRAG - - - - - - - - - - - - - 0.            (LB)
ENGINE INLET AREA - - - - - - - - - - - - - -    40.726      (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - - - -      .997      (NO UNITS)
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                                 LPC TEST PROBLEM NUMBER 3  -----  NSEG III
                                 ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                 FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                              MISSION SEGMENT TABLE

         .20000     0.          .815000E+06  6.0000     1200.0     .500000E-01  1.0000      100.00              0
 2       4.0000      .40000     0.0000       .826000E+06 99120.          51000 0.                   21        0  11111111111
 3      0.          0.         0.            5.0000     2.0000          51000  2.0000               17        0  11111111111
 4      0.          0.          .820000E+06 0.          0.              51002 0.                    13        0  11111111111
 5       .52000     3000.0     0.            4.0000     0.              51100 0.                     1        0  11111111111
 6       .60000     5000.0     0.            4.0000     0.              51100 0.                     1        0  11111111111
 7       .80000     21500.     0.            4.0000     0.              51100 0.                     1        0  11111111111
 8       .95000     29000.     0.            4.0000     0.              51100 0.                     1        0  11111111111
 9      1.5000      40500.     0.            4.0000     0.              51100 0.                     1        0  11111111111
10      2.6000      52971.     0.            4.0000     0.              51100 0.                     1        0  11111111111
11      5.9500      87990.     0.            5.0000     0.              51100 0.                     1        0  11111111111
12      5.9900      99120.     0.            4.0000     0.              51100 0.                     1        0  11111111111
13      5.0000       .40000    6.0000       0.          -99120.         51100 0.                    21        0  11111111111
14      0.          0.         0.            5.0000     12.000          51100 0.                    22        9  11111111111
15      0.          0.          .930000E+06 0.          0.              51010  1.0000                4        0  11111111111
16       .80000     20000.     3.0000       1.0000      0.              51210 0.                     1        0  11111111111
17      0.          0.         0.            5.0000     1.0000          51610  2.0000               17        0  11111111111
18       .80000     45000.     3.0000       4.0000      0.              51110 0.                     1        0  11111111111
19      0.          0.         0.            1.0000     200.00          51010 0.                     7        0  11111111111
20       .80000     20000.     3.0000       1.0000      0.              51210 0.                     1        0  11111111111
21      0.          0.         0.            5.0000     1.0000          51010  2.0000               17        0  11111111111
22       .20000     50.000     3.0000       1.0000      0.              51210 0.                     1        0  11111111111
23      1.0000      2.0000     7350.0       4.0000      20.000          51210 0.                    22        9  11111111111
24      0.          0.         0.           0.          1.0000          51210  4.0000               17        0  11111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                         01/14/77           10.23.06.         PAGE   54

                                           LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                           ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                           FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


 DUMPRG

SEG       WT           H              AM        TIME         FUEL       RANGE         XNZZ       E10    E11 OPTION
  1   .8150E+06  0.             .2000      0.           0.          0.              1.000        0.     0.      X
  2   .8150E+06  0.             .2000      0.           0.          0.              1.000       -0.     0.     21
  3   .8134E+06   50.00         .2064       .8333E-01   1610.       0.              1.000       -0.     0.     17
  4   .8300E+06   50.00         .2064      0.           0.          0.              1.000       -0.     0.     13
  5   .8250E+06   3000.         .5000       .2225E-01   4930.        4.720          1.000       -0.     0.      1
  6   .8236E+06   5000.         .6000       .6500E-02   1464.        2.305          1.000       -0.     0.      1
  7   .8170E+06   .2150E+05     .8600       .3500E-01   6537.        15.63          1.000       -0.     0.      1
  8   .8125E+06   .2900E+05     .9500       .2540E-01   4533.        13.44          1.000       -0.     0.      1
  9   .7924E+06   .4050E+05    1.500        .1009       .2011E+05   74.91          1.000       -0.     0.      1
 10   .7770E+06   .5297E+05    2.600        .4546E-01   .1456E+05   51.29          1.000       -0.     0.      1
 11   .7354E+06   .8799E+05    5.950        .1443       .4241E+05   370.7          1.000       -0.     0.      1
 12   .7327E+06   .9912E+05    5.990        .1390E-01   2777.       40.77          1.000       -0.     0.      1
 13   .7327E+06   .9912E+05    5.990      0.            2777.      0.               1.000       -0.     0.     21
 14   .7873E+06   .9912E+05    5.990      0.            2640.      0.               1.000        1.     0.     22
 15   .5380E+06   .9912E+05    5.145       1.643        .1773E+06   5373.          1.000       -0.     0.      6
 16   .5260E+06   .2000E+05     .8000       .4107       3167.        451.4          1.000       -0.     0.      1
 17   .5229E+06   .2000E+05     .8000       .8333E-01   3959.      0.               1.000       -0.     0.     17
 18   .5175E+06   .4500E+05     .8000       .6827E-01   5306.        31.20          1.000       -0.     0.      1
 19   .5026E+06   .4500E+05     .8000       .4362       .1492E+05   200.0          1.000       -0.     0.      7
 20   .4997E+06   .2000E+05     .8000       .1619       2073.        69.96          1.000       -0.     0.      1
 21   .4958E+06   .2000E+05     .8000       .8333E-01   3921.      0.               1.000       -0.     0.     17
 22   .4954E+06   50.00         .2000       .1024       366.6        52.10          1.000       -0.     0.      1
 23 -0.          -0.          -0.          -0.          -0.          -0.          -0.              1.    -0.     -0
 24 -0.          -0.          -0.          -0.          -0.          -0.          -0.             -0.    -0.     -0
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/14/77          10.23.00.          PAGE   55

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                         LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT       FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAM7D        NET THRUST      SFC

   0.000   0.                829983.   0.                50.        .206         136.        3.09   303009.6       .73107

    .152    .35647           829422.    560.9            197.       .221         146.        4.31   304287.6       .72740

    .269    .64999           828990.    993.3            345.       .236         156.        5.02   306703.1       .72120

    .367    .91055           828629.   1354.             492.       .250         165.        5.53   308267.1       .71716

    .453   1.1518            828314.   1669.             640.       .265         175.        5.89   309273.6       .71459

    .530   1.3812            828030.   1953.             788.       .280         184.        6.14   309914.7       .71304

    .600   1.6030            827770.   2214.             935.       .294         194.        6.31   310310.7       .71219

    .666   1.8203            827526.   2457.            1082.       .309         204.        6.40   310542.5       .71100

    .729   2.0353            827297.   2687.            1230.       .324         213.        6.45   310624.0       .71201

    .788   2.2493            827078.   2905.            1377.       .339         223.        6.47   310607.3       .71240

    .845   2.4634            826868.   3115.            1525.       .353         232.        6.45   310732.4       .71297

    .900   2.6782            826666.   3317.            1672.       .368         242.        6.42   310701.0       .71369

    .953   2.8945            826470.   3513.            1820.       .383         251.        6.37   310851.2       .71450

   1.004   3.1128            826280.   3704.            1967.       .397         261.        6.31   310951.0       .71530

   1.054   3.3333            826094.   3890.            2115.       .412         270.        6.24   311094.1       .71632

   1.103   3.5564            825912.   4072.            2262.       .427         280.        6.17   311201.7       .71720

   1.151   3.7825            825733.   4250.            2410.       .441         289.        6.08   311510.6       .71827

   1.198   4.0117            825557.   4426.            2557.       .456         299.        6.00   311810.6       .71927

   1.244   4.2442            825384.   4599.            2705.       .471         308.        5.91   312175.1       .72010

   1.290   4.4802            825214.   4770.            2852.       .485         318.        5.82   312505.4       .72117

   1.335   4.7199            825045.   4938.            3000.       .500         327.        5.70   313053.6       .72215
 45. ****** XCLECT END     OPTION   1 ******
                           WT     =   .82504E+06     H     =   3000.0          AM    =   .50000

                           TIME   =   .83333E-01     RANGE =  0.               FUEL  =   2777.2

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =   61.923          CPU TIME USED IN PREVIOUS TASK =   1.1100

  RGSAVE
 ITZ          WT            H            AM       TAC***        FUEL       RUN***         XNZZ   E10    E11 OPTION
  41   .8253E+06   3030.         .5000        .2225E-01   4938.        4.720        1.000      -0.    0.     1

 UNPACK        51      51100          5          1         1          0         0.          1
   .60000       5000.0      0.             4.0000     0.                    51100 0.                      1 0.          1111111111
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                                               LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                               FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                 LINEAR MACH ALTITUDF CLIMB PATH HISTORY

 TIME          RANGE          WEIGHT      FUEL          ALTITUDE      MACH NO.    V (KNOTS)   GAMYD         NET THRUST        SFC

    0.000   0.               825045.   0.               3000.            .500         327.          8.56   313075.7          .72210

     .020    .10920          824969.    76.00           3100.            .505         330.          8.54   312817.6          .72233

     .040    .21916          824893.   151.6            3200.            .510         333.          8.49   312565.6          .72257

     .060    .32965          824818.   226.9            3300.            .515         337.          8.44   312322.0          .72280

     .080    .44074          824743.   301.9            3400.            .520         340.          8.40   312089.0          .72303

     .100    .55244          824668.   376.5            3500.            .525         343.          8.35   311864.3          .72325

     .120    .66476          824594.   450.9            3600.            .530         346.          8.31   311648.7          .72348

     .140    .77769          824521.   524.9            3700.            .535         349.          8.26   311442.1          .72369

     .159    .89126          824446.   598.6            3800.            .540         352.          8.22   311244.5          .72390

     .179   1.0054           824373.   672.1            3900.            .545         355.          8.17   311037.0          .72412

     .198   1.1203           824300.   745.3            4000.            .550         359.          8.13   310828.7          .72434

     .218   1.2358           824227.   818.2            4100.            .555         362.          8.08   310640.0          .72455

     .237   1.3519           824154.   890.8            4200.            .560         365.          8.04   310461.9          .72476

     .256   1.4687           824082.   963.3            4300.            .565         368.          7.99   310292.1          .72496

     .276   1.5861           824009.   1035.            4400.            .570         371.          7.95   310131.3          .72515

     .295   1.7042           823938.   1107.            4500.            .575         374.          7.91   309979.5          .72534

     .314   1.8229           823866.   1179.            4600.            .580         377.          7.86   309836.6          .72553

     .333   1.9423           823794.   1251.            4700.            .585         380.          7.82   309702.5          .72571

     .352   2.0624           823723.   1322.            4800.            .590         384.          7.78   309577.4          .72589

     .371   2.1831           823652.   1393.            4900.            .595         387.          7.74   309461.0          .72606

     .390   2.3045           823581.   1464.            5000.            .600         390.          7.72   309353.4          .72623
46. ****** XCLECT END     OPTION   1 ******
                  WT     =   .82358E+06     H      =    5000.0         AM     =   ,60000

                  TIME   =   .10550         RANGE =    4.7199         FUEL   =   4930.4

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   63.367          CPU TIME USED IN PREVIOUS TASK =   1.1440

 RGSAVE
ITZ           WT              H              AM       TAC***        FUEL       RUN***        XNZZ    E10   E11 OPTION
 51   .8236E+06   5000.        .6000       .6500E-02   1464.       2.305       1.000      -0.    0.     1

UNPACK         61     51100          5          1         1         0         0.         1
  .80000       21560.      0.             4.0000     0.                51100 0.                        1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.23.13.          PAGE   57

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                         LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME        RANGE         WEIGHT      FUEL         ALTITUDE     MACH NO.     V (KNOTS)   GAM7D          NET THRUST       SFC

    0.000   0.                823581.   0.               5000.         .600          390.        13.00   309352.2         .72624

     .092   .58792            823239.    342.0           5825.         .610          395.        12.82   303650.9         .72530

     .186   1.1923            822899.   681.7            6650.         .620          400.        12.49   298108.1         .72430

     .280   1.8136            822562.   1019.            7475.         .630          406.        12.15   292650.2         .72335

     .376   2.4525            822227.   1354.            8300.         .640          411.        11.83   287265.7         .72235

     .474   3.1094            821893.   1688.            9125.         .650          416.        11.52   281981.9         .72131

     .572   3.7848            821562.   2019.            9950.         .660          421.        11.21   276721.1         .72029

     .673   4.4794            821232.   2349.           10775.         .670          426.        10.91   271639.0         .71918

     .774   5.1936            820904.   2677.           11600.         .680          431.        10.61   266592.4         .71808

     .878   5.9281            820578.   3003.           12425.         .690          436.        10.32   261640.0         .71694

     .983   6.6839            820253.   3328.           13250.         .700          441.        10.04   256653.1         .71605

    1.090   7.4619            819929.   3652.           14075.         .710          446.         9.75   251671.3         .71529

    1.198   8.2634            819606.   3975.           14900.         .720          451.         9.47   246810.2         .71447

    1.309   9.0888            819284.   4297.           15725.         .730          456.         9.20   242001.1         .71364

    1.422   9.9392            818963.   4618.           16550.         .740          461.         8.93   237204.4         .71270

    1.537   10.816            818642.   4939.           17375.         .750          465.         8.67   232602.0         .71192

    1.654   11.719            818322.   5259.           18200.         .760          470.         8.41   227999.2         .71104

    1.774   12.651            818002.   5579.           19025.         .770          475.         8.16   223465.4         .71013

    1.896   13.612            817683.   5898.           19850.         .780          479.         7.92   219040.1         .70917

    2.021   14.603            817363.   6218.           20675.         .790          484.         7.67   214706.1         .70817

    2.148   15.627            817044.   6537.           21500.         .800          488.         7.55   210322.3         .70717
 47. ****** XCLECT END     OPTION   1 ******
                     WT     =   .81704E+06      H      =   21500.         AM     =   .80000

                     TIME   =   .11208         RANGE =   7.0244         FUEL   =   1463.9

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   64.237          CPU TIME USED IN PREVIOUS TASK =   1.1700

 RGSAVE
ITZ          WT              H            AM        TAC***        FUEL      RUN***         XNZZ   E10   E11 OPTION
 61   .8170E+06   .2150E+05   .8000        .3500E-01   6537.       15.63        1.000      -0.    0.     1


UNPACK        71      51100          5          1          1          0         0.         1
  .95000      29000.      0.           4.0000      0.                51100 0.                    1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77           10.23.15.          PAGE   58

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                         LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME          RANGE          WEIGHT        FUEL         ALTITUDE      MACH NO.     V (KNOTS)   GAMTD        NET THRUST        SFC

   0.000    0.                817044.    0.              21500.          .800          488.         7.09   210310.5         .70719

    .061    .49564            816856.    188.1           21875.          .807          492.         7.15   231763.4         .84759

    .121    .98320            816661.    382.7           22250.          .815          496.         7.12   230202.7         .84576

    .182    1.4836            816465.    579.0           22625.          .822          500.         6.94   228625.3         .84393

    .244    1.9973            816266.    777.2           23000.          .830          503.         6.76   227076.9         .84206

    .307    2.5251            816066.    977.3           23375.          .837          507.         6.58   225557.5         .84016

    .371    3.0675            815864.    1180.           23750.          .845          511.         6.40   224081.1         .83829

    .437    3.6256            815659.    1384.           24125.          .852          515.         6.22   222444.4         .83643

    .504    4.2008            815452.    1591.           24500.          .860          518.         6.04   220915.1         .83453

    .572    4.7915            815242.    1801.           24875.          .867          522.         5.86   219410.9         .83259

    .643    5.4011            815030.    2014.           25250.          .875          526.         5.69   217914.6         .83069

    .714    6.0290            814814.    2230.           25625.          .882          529.         5.52   216435.2         .82876

    .788    6.6784            814595.    2449.           26000.          .890          533.         5.35   214903.4         .82679

    .863    7.3402            814373.    2671.           26375.          .897          537.         5.16   213539.6         .82481

    .941    8.0453            814145.    2899.           26750.          .905          540.         4.91   212051.4         .82284

   1.023    8.7040            813907.    3136.           27125.          .912          544.         4.62   210592.8         .82084

   1.110    9.5720            813658.    3385.           27500.          .920          548.         4.33   209159.6         .81881

   1.203    10.415            813396.    3648.           27875.          .927          551.         4.04   207720.4         .81678

   1.301    11.322            813118.    3925.           28250.          .935          555.         3.75   206292.7         .81478

   1.407    12.303            812823.    4220.           28625.          .942          558.         3.46   204883.5         .81275

   1.521    13.360            812507.    4536.           29000.          .950          562.         3.31   203500.0         .81060
 49. ****** XCLECT END     OPTION   1 ******
                   WT     =   .81251E+06     H      =   29000.          AM     =   .95000

                   TIME   =   .14700         RANGE =    22.651          FUEL   =   6537.4

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   65.423          CPU TIME USED IN PREVIOUS TASK =   1.1060

 RGSAVE
ITZ          WT            H             AM       TAC***          FUEL       RUN***          XNZZ    E10   E11 OPTION
 71   .8125E+06   .2900E+05   .9500         .2536E-01   4536.        13.37        1.000       -0.    0.     1


UNPACK         01     51100          5         1         1         0         0.         1
  1.5000      40500.     0.          4.6000     6.              51100 0.                   1 0.           1111111111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                        01/14/77          10.21.19.         PAGE   59

                                               LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                               ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                               FOR GIVEN FINAL WEIGHT.   IN-FLIGHT ENGINE SCALING REQUESTED.


                                                    LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT      FUEL        ALTITUDE      MACH NO.    V (KNOTS)   GAMTD       NET THRUST       SFC

    0.000   0.              812567.   0.            29000.         .950        562.         1.86   283508.3        .81869

     .306    2.9259         811660.   847.5         29575.         .977        577.         1.70   285854.6        .81115

     .668    6.4241         810640.   1862.         30150.        1.005        592.         1.44   287644.3        .81410

    1.075   10.404          809494.   3014.         30725.        1.032        606.         1.27   286459.7        .82942

    1.514   14.976          808232.   4276.         31300.        1.060        621.         1.15   285534.1        .84391

    1.988   19.942          806851.   5656.         31875.        1.087        635.         1.12   284884.7        .85748

    2.426   24.629          805550.   6949.         32450.        1.115        650.         1.16   280717.[illegible]        .85467

    2.850   29.267          804290.   8217.         33025.        1.142        664.         1.19   284916.1        .88188

    3.252   33.757          803073.   9434.         33600.        1.170        678.         1.24   282648.1        .90431

    3.622   37.982          801936.   .1057E+05     34175.        1.197        692.         1.30   280797.6        .92390

    3.974   42.098          800839.   .1167E+05     34750.        1.225        706.         1.30   199747.7        .94123

    4.328   46.293          799724.   .1278E+05     35325.        1.252        720.         1.29   199104.2        .95663

    4.679   50.549          798612.   .1391E+05     35900.        1.280        734.         1.23   198951.1        .97881

    5.045   55.078          797414.   .1509E+05     36475.        1.307        749.         1.34   199372.5        .98449

    5.336   58.743          796455.   .1605E+05     37050.        1.335        765.         1.63   220092.8        .98967

    5.572   61.786          795659.   .1685E+05     37625.        1.362        781.         1.85   227033.5        .89076

    5.796   64.597          794924.   .1758E+05     38200.        1.390        797.         1.99   232925.1        .89253

    5.983   67.235          794236.   .1827E+05     38775.        1.417        813.         2.10   238365.9        .88837

    6.167   69.751          793590.   .1893E+05     39350.        1.445        828.         2.20   243422.5        .88503

    6.340   72.162          792952.   .1956E+05     39925.        1.472        844.         2.29   248445.1        .88397

    6.504   74.477          792350.   .2016E+05     40500.        1.500        860.         2.34   253494.8        .88130
 49. ****** XCLECT END     OPTION   1 ******
                        WT     =   .79235E+06     H     =    40500.         AM     =   1.5000

                        TIME   =   .17324        RANGE =    34.019         FUEL   =   4536.3

*** *** *** -** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   67.095          CPU TIME USED IN PREVIOUS TASK =   1.6720

 RGSAVE
ITZ           WT             H            AM       TAC***         FUEL        RUN***         XNZZ    E10    E11 OPTION
 01   .7924E+06   .4050E+05   1.500        .1084        .2016E+05   74.48         1.000     -0.    0.     1


UNPACK         91      51100          5         1         1          0          0.         1
  2.6800       52971.      0.           4.0000      0.                 51100 0.                   1 0.          1111111111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                          01/14/77            10.23.23.          PAGE   68

                                              LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                  LINEAR MACH ALTITUDE CLIMB PATH HISTORY

TIME          RANGE          WEIGHT      FUEL         ALTITUDE       MACH NO.    V (KNOTS)   GAMPD         NET THRUST       SFC

   0.000   0.                792350.   0.              40500.         1.500         860.         1.60  253565.0         .08125

    .252    3.6732           791385.    965.1          41124.         1.555         891.         1.68  269730.0         .07714

    .473    7.0075           790491.   1859.           41747.         1.610         923.         1.84  286460.7         .07249

    .668   10.065            789654.   2696.           42371.         1.665         954.         2.00  303660.5         .06978

    .843   12.892            788866.   3484.           42994.         1.720         986.         2.16  319981.6         .06699

   1.001   15.522            788119.   4231.           43618.         1.775        1017.         2.31  337282.3         .06378

   1.144   17.978            787409.   4941.           44241.         1.830        1049.         2.47  354826.1         .06091

   1.274   20.285            786732.   5619.           44865.         1.885        1080.         2.62  372584.6         .05822

   1.393   22.459            786082.   6268.           45488.         1.940        1112.         2.77  390673.3         .05572

   1.503   24.520            785458.   6892.           46112.         1.995        1144.         2.86  407653.6         .05278

   1.609   26.562            784840.   7510.           46735.         2.050        1175.         2.86  417851.7         .05069

   1.713   28.627            784213.   8137.           47359.         2.105        1207.         2.83  432734.1         .04865

   1.815   30.710            783576.   8774.           47983.         2.160        1238.         2.80  447228.1         .04730

   1.916   32.814            782930.   9420.           48606.         2.215        1270.         2.76  461770.1         .04521

   2.016   34.964            782272.   .1008E+05       49230.         2.270        1301.         2.66  469186.0         .04238

   2.120   37.224            781591.   .1076E+05       49853.         2.325        1333.         2.53  472796.2         .04000

   2.226   39.613            780884.   .1147E+05       50477.         2.380        1364.         2.39  476370.1         .03891

   2.336   42.142            780150.   .1220E+05       51100.         2.435        1396.         2.28  480369.9         .03644

   2.448   44.776            779392.   .1296E+05       51724.         2.490        1427.         2.24  491882.1         .03513

   2.557   47.389            778641.   .1371E+05       52347.         2.545        1459.         2.32  501779.4         .03326

   2.657   49.845            777930.   .1441E+05       52971.         2.600        1490.         2.39  512131.4         .03141

50. ****** XCLECT END     OPTION   1 ******
                    WT     =   .77794E+06     H     =   52971.          AM     =   2.6000

                    TIME   =   .28163         RANGE =   110.50          FUEL   =   20157.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    69.171          CPU TIME USED IN PREVIOUS TASK =    2.0760

 RGSAVE
ITZ          WT             H            AM       TAC***         FUEL       RUN***         XNZZ    E10    E11 OPTION
 91    .7779E+06    .5297E+05    2.600        .4428E-01    .1441E+05    49.85         1.000        -0.    0.     1


UNPACK         101      51100          5          1          1          0          0.          1
  5.9500        87990.      0.          5.0000      0.                 51100 0.                     1 0.          1111111111
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   HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/14/77            10.23.26.          PAGE   61

                                             LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                             ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                             FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                              CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

  TIME       RANGE          WEIGHT      FUEL          ALTITUDE     MACH NO.    V (KNOTS)   GAMTO          NET THRUST        SFC

     0.000   0.              777938.   0.             52971.       2.680       1490.        3.82  512049.3          .83139

      .171    4.3174         776725.    1213.          54722.       2.695       1545.        3.62  512325.5          .82931

      .354    9.1170         775434.    2504.          56473.       2.811       1611.        3.37  504732.1          .82779

      .536   14.098          774192.    3746.          58224.       2.932       1681.        3.17  484074.5          .83149

      .726   19.535          772934.    5004.          59975.       3.058       1753.        2.73  422952.4          .91990

      .954   26.332          771482.    6456.          61726.       3.190       1828.        2.29  409497.3          .91691

     1.199   33.958          769974.    7964.          63477.       3.327       1907.        2.04  396209.1          .91517

     1.463   42.522          768406.    9532.          65228.       3.470       1999.        1.80  382956.4          .91540

     1.755   52.394          766732.    .1121E+05      66979.       3.619       2076.        1.57  369934.1          .91793

     2.074   63.673          764961.    .1298E+05      68730.       3.774       2160.        1.38  355126.4          .92105

     2.420   76.460          763102.    .1484E+05      70480.       3.935       2263.        1.22  342068.7          .92479

     2.794   90.890          761154.    .1678E+05      72231.       4.103       2363.        1.08  331609.7          .92865

     3.197  107.12           759109.    .1883E+05      73982.       4.278       2467.         .95  321320.2          .93567

     3.633  125.41           756951.    .2099E+05      75733.       4.460       2574.         .85  310806.2          .94679

     4.107  146.20           754655.    .2328E+05      77484.       4.649       2687.         .74  298132.3          .96100

     4.631  170.16           752187.    .2575E+05      79235.       4.845       2804.         .64  285277.4          .97745

     5.212  197.90           749522.    .2842E+05      80986.       5.049       2925.         .55  272576.9          .99679

     5.858  230.69           746635.    .3130E+05      82737.       5.262       3052.         .49  260887.3         1.0150

     6.575  267.34           743508.    .3443E+05      84488.       5.482       3184.         .41  250064.2         1.0339

     7.375  310.71           740104.    .3783E+05      86239.       5.712       3321.         .35  238976.9         1.0552

     8.275  361.63           736365.    .4157E+05      87990.       5.950       3464.         .32  228398.7         1.0783
 51. ****** XCLECT END     OPTION   1 ******
                      WT     =    .73637E+06      H      =    87990.         AM     =    5.9500

                      TIME   =    .32591         RANGE =    150.34          FUEL   =    14412.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    70.631           CPU TIME USED IN PREVIOUS TASK =    1.4600

 RGSAVE
ITZ          WT              H            AM       TAC***         FUEL       RUN***          XNZZ    E10    E11 OPTION
101   .7364E+06    .8799E+05    5.950         .1379         .4157E+05    361.6         1.000        -0.     0.      1

UNPACK         111      51100            5          1          1          0         0.          1
  5.9900       99120.      0.            4.0000      0.                  51100 0.                      1 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/14/77          10.23.29.          PAGE   62

                                  LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                  ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7950 NM TOTAL RANGE
                                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                     LINEAR MACH ALTITUDE CLIMB PATH HISTORY
 TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST      SFC

   0.000    0.           736365.    0.            87990.       5.950        3464.        3.38    228255.5        1.0783

    .028    1.5849       736253.    111.9         88546.       5.952        3466.        3.25    223294.9        1.0778

    .056    3.2262       736141.    225.0         89103.       5.954        3469.        3.15    219370.5        1.0774

    .085    4.9144       736026.    339.4         89659.       5.956        3471.        3.06    215554.8        1.0769

    .115    6.6561       735910.    455.4         90216.       5.958        3474.        2.96    211842.6        1.0765

    .146    8.4544       735793.    572.8         90772.       5.960        3476.        2.87    208233.6        1.0761

    .178    10.317       735673.    692.0         91329.       5.962        3479.        2.77    204724.2        1.0757

    .212    12.234       735552.    813.1         91885.       5.964        3481.        2.68    201311.0        1.0753

    .246    14.222       735429.    936.2         92442.       5.966        3484.        2.59    197993.0        1.0749

    .281    16.282       735304.    1061.         92998.       5.968        3486.        2.50    194767.9        1.0745

    .319    18.418       735176.    1189.         93555.       5.970        3489.        2.41    191631.4        1.0741

    .356    20.636       735046.    1319.         94111.       5.972        3491.        2.32    188582.0        1.0737

    .396    22.942       734913.    1453.         94668.       5.974        3494.        2.23    185617.4        1.0734

    .437    25.343       734776.    1589.         95224.       5.976        3496.        2.14    182735.3        1.0730

    .481    27.845       734636.    1729.         95781.       5.978        3499.        2.05    179933.4        1.0726

    .526    30.449       734493.    1872.         96337.       5.980        3501.        1.96    177209.5        1.0723

    .572    33.153       734345.    2020.         96894.       5.982        3503.        1.87    174561.5        1.0719

    .621    36.000       734192.    2173.         97450.       5.984        3506.        1.78    171987.1        1.0716

    .673    38.972       734035.    2331.         98007.       5.986        3508.        1.70    169484.3        1.0713

    .727    42.086       733871.    2494.         98563.       5.988        3511.        1.61    167051.0        1.0710

    .784    45.599       733701.    2664.         99120.       5.990        3513.        1.56    164685.1        1.0706

  ****** SELECT END     OPTION   1 ******
                  WT    =   .73370E+06      H     =    99120.       AM     =    5.9900

                  TIME  =   .46387          RANGE =    521.97       FUEL   =    41573.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    72.373          CPU TIME USED IN PREVIOUS TASK =    1.7420

 RGSAVE
IT?          WT            H           AM        TAC***        FUEL      RUN***         XNZZ    E10    E11 OPTION
111    .73370E+06    .99120E+05   5.990       .1307E-01    2664.        45.60       1.000     -0.     0.      1

NUMBC=         121      51110           5          1          1          0          0.         21
  5.0010         .50000       4.0000      9.            -99120.           51100 0.                     21 0.            1111111111
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            RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER

RAMJET GROSS THRUST - - - - - - - - - - - -    41514.9      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -      41399.7      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - - -    420.449      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - - -    12.2771      (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - - -    3381.53      (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - - -      1.000      (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - - -    99120.7      (FEET)
SCALING MACH NUMBER - - - - - - - - - - - -      6.000      (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - - -    421.023      (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - - -    5.40694      (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - - -.700000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - - -   6.00000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -     41399.7      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - - -    3671.25      (LB)
INLET SPILLAGE DRAG - - - - - - - - - - - -  0.             (LB)
ENGINE INLET AREA - - - - - - - - - - - - -     40.767      (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - - -       .997      (NO UNITS)
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        NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                          01/14/77            10.23.44.          PAGE   63

                                                LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

 SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

  THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                      CLIMB PATH HISTORY

   TIME          RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAMTD         NET THRUST        SFC

      0.000    0.              530000.   0.               99120.         5.091        2986.         8.07  -11313.56       -.11932

       .370     18.213         529993.    6.815          114933.         4.784        2835.         3.72  -11782.42       -.713111E-01

       .715     33.866         529988.    11.56          113786.         4.636        2746.         -.66  -12464.88       -.671676E-01

      1.065     49.947         529984.    16.43          112640.         4.484        2654.         -.71  -12128.09       -.609666E-01

      1.434     65.664         529978.    21.52          111507.         4.327        2559.        -2.23  -11547.68       -.718146E-01

      1.822     81.939         529973.    27.23          104958.         4.218        2484.        -3.49  -11049.76       -.857246E-01

      2.276     101.44         529965.    34.96           98528.         4.105        2407.        -3.16  -10267.17       -.10728

      2.788     120.37         529955.    45.02           92399.         3.986        2327.        -3.03  -9869.888       -.13271

      3.337     140.37         529942.    57.71           85569.         3.861        2244.        -3.11  -9862.282       -.16169

      3.823     159.31         529927.    73.01           79760.         3.732        2158.         1.76  -10189.71       -.19399

      4.449     181.58         529912.    87.94           94456.         3.331        1947.         1.53  -8373.606       -.12812

      5.128     202.11         529899.    101.0           86115.         3.198        1859.        -3.66  -9225.882       -.14107

      5.836     223.47         529881.    118.9           77776.         3.056        1767.         -.24  -9596.928       -.10886

      6.535     242.98         529859.    141.1           84381.         2.695        1565.         2.14  -7655.810       -.21946

      7.290     261.94         529842.    156.9           86547.         2.356        1370.          .13  -7129.507       -.13509

      8.308     283.15         529829.    170.7           84622.         2.236        1182.        -3.13  -8234.852       -.830886E-01

      9.539     306.32         529812.    187.8           71741.         1.885        1085.        -4.17  -10574.31       -.936746E-01

     10.930     329.37         529790.    209.8           64123.         1.574         902.        -3.91  -13423.29       -.664993E-01

     12.393     349.77         529768.    231.5           53723.         1.265         725.        -4.15  -27279.44       -.325690E-01

     14.961     372.83         529746.    261.4           45237.          .769         441.        -4.32   713.1246       .00102

     20.398     409.09         529657.    343.4           24473.          .621         375.        -3.35   1570.796       .03114

     24.442     433.76         526840.    3160.           20000.          .800         491.        -1.44   61792.82       .76934

 96.  ****** SELECT END     OPTION   1 ******
                                 WT    =   .526840E+06      H     =    20000.          AM    =   .80003

                                 TIME  =   2.3292          RANGE =    6567.9          FUEL  =   .28370E+06

 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =   79.499          CPU TIME USED IN PREVIOUS TASK =   6.9560

  RCSAVE
 IYZ           WT              H           AM        TAC***          FUEL        RUN***          XN27    E10    E11 OPTION
 151    .52684E+06    .20000E+05    .80000        .4274         3160.        439.1        1.000         -0.     0.      1

 UNPACK         151      51011          5           1          3          10         10.          17
  0.            0.            0.              5.0000      1.0009             51013  2.0000                  17 6.             1111111111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77          18.23.46.         PAGE   64

                                   LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                   ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7951 NM TOTAL RANGE
                                   FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                      LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE         WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAMMA        NET THRUST      SFC

    0.000   0.                522881.   0.             20000.        .800          491.       19.66   221295.2        .76891

     .077    .59493           522694.    187.2         21250.        .800          489.       18.66   212221.3        .75724

     .158   1.2222            522485.    395.8         22500.        .800          486.       17.69   203170.6        .74561

     .244   1.8851            522285.    596.3         23750.        .800          484.       16.78   194422.8        .73397

     .335   2.5865            522082.    798.9         25000.        .800          481.       15.90   185878.6        .72240

     .432   3.3299            521877.   1004.          26250.        .800          479.       15.03   177695.8        .70877

     .534   4.1192            521670.   1211.          27500.        .800          476.       14.18   169691.5        .69924

     .643   4.9592            521459.   1422.          28750.        .800          474.       13.30   161963.5        .69737

     .761   5.8610            521244.   1637.          30000.        .800          471.       12.36   153208.4        .69206

     .888   6.8391            521026.   1855.          31250.        .800          469.       11.40   144821.1        .68669

    1.028   7.9038            520803.   2078.          32500.        .800          466.       10.47   136823.4        .68126

    1.180   9.0676            520573.   2308.          33750.        .800          463.        9.59   129224.7        .67583

    1.348   10.342            520336.   2545.          35000.        .800          461.        8.66   122376.1        .67175

    1.537   11.777            520085.   2796.          36250.        .800          459.        7.51   115755.5        .66880

    1.762   13.496            519803.   3078.          37500.        .800          459.        6.40   109013.4        .66869

    2.016   15.410            519505.   3376.          38750.        .800          459.        5.73   102663.2        .66828

    2.304   17.601            519186.   3695.          40000.        .800          459.        5.03   96681.38        .66821

    2.636   20.133            518838.   4042.          41250.        .800          459.        4.29   91646.51        .66845

    3.027   23.116            518453.   4427.          42500.        .800          459.        3.60   85730.25        .66860

    3.500   26.727            518015.   4866.          43750.        .800          459.        2.92   80737.51        .66870

    4.297   31.278            517495.   5386.          45000.        .800          459.        2.59   76026.28        .66890
 58. ****** SELECT END     OPTION   1 ******
                  WT     =   .51749E+06     H     =    45000.        AM     =    .80000

                  TIME   =   2.8199         RANGE =    7387.2        FUEL   =    3999.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    81.889          CPU TIME USED IN PREVIOUS TASK =   1.1520

  RGSAVE
 ITZ          WT              H             AM       TAC***          FUEL       RUN***          XNZZ    E10    E11 OPTION
 171    .51750E+06    .45000E+05    .80000        .6020E-01    5386.        31.28        1.000        -0.     0.      1


 UNPACK        181      91012          9          1          0         10        10.          7
  0.           0.           0.           1.0000      200.03            91610 0.                      7 0.            1111111111
 NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77          10.23.57.        PAGE   65

                                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                              CLIMB PATH HISTORY

  TIME         RANGE        WEIGHT      FUEL         ALTITUDE    MACH NO.    V (KNOTS)   GAMPD        NET THRUST       SFC

    0.000   0.            502577.   0.            45000.         .800        459.      -1.90   739.5932       .80121
     .245   1.9323        502575.    2.482        44631.         .764        438.      -3.51   729.2291       .79838
     .497   3.6530        502572.    4.893        43630.         .756        433.      -5.09   759.1359       .79763
     .755   5.4970        502569.    7.547        42846.         .747        428.     -10.09   796.4141       .79660
    1.015   7.2848        502566.   10.60         39546.         .831        476.      -9.88   988.0437       .01150
    1.258   9.2935        502563.   13.93         38604.         .821        470.      -4.50  1030.713        .02043
    1.518  11.294         502559.   17.40         37662.         .811        465.      -4.46  1065.495        .00433
    1.773  13.271         502556.   21.20         36719.         .800        459.      -4.35  1101.411        .00813
    2.045  15.332         502552.   25.35         35777.         .789        453.      -4.31  1138.607        .00864
    2.320  17.380         502547.   29.62         34835.         .775        447.      -4.31  1172.742        .00314
    2.599  19.447         502543.   34.05         33893.         .761        441.      -4.30  1206.984        .00573
    2.883  21.510         502538.   38.72         32950.         .748        435.      -4.29  1242.258        .00024
    3.171  23.577         502533.   43.62         32008.         .734        429.      -4.28  1278.943        .01070
    3.464  25.647         502528.   48.76         31066.         .720        422.      -4.28  1315.997        .01337
    3.762  27.721         502523.   54.17         30124.         .706        416.      -4.27  1355.676        .21647
    4.065  29.799         502517.   59.86         29182.         .692        409.      -4.26  1396.500        .01954
    4.374  31.881         502511.   65.85         28239.         .678        402.      -4.25  1430.112        .02250
    4.689  33.968         502505.   72.15         27297.         .664        396.      -4.24  1480.934        .02555
    5.029  36.058         502498.   78.80         26355.         .650        389.      -4.23  1525.249        .02843
    5.337  38.153         502491.   85.82         25413.         .636        382.      -4.23  1570.170        .03129
    5.671  40.253         502484.   93.19         24470.         .621        375.      -2.03  1616.374        .03480
    9.714  69.559         499704.  2873.          20000.         .800        491.      -1.44  60326.95        .70069
60. ****** KOLECT END     OPTION   1 ******
                         WT    =  .49970E+06     H     =   20000.          AM    =   .80000

                         TIME  =  3.3243         RANGE =   7230.4          FUEL  =   14910.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   85.[illegible]         CPU TIME USED IN PREVIOUS TASK =   4.7120

 RGSAVE
ITZ          WT              H            AM        TAC***          FUEL       RUN***          XNZZ   E10   E11 OPTION
191   .4997E+06   .2000E+05   .8007        .1619          2873.         69.56           1.000          -0.    0.     1

UNPACK          2?1      51010          5          1         9          10        10.          17
 0.             0.             0.          5.0000        1.0000            51010  2.0000              17 0.           1111111111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77          10.24.06.          PAGE   66

                                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                                CLIMB PATH HISTORY

  TIME          RANGE         WEIGHT        FUEL          ALTITUDE      MACH NO.      V (KNOTS)   GAMTD         NET THRUST        SFC

     0.000    0.                495784.   0.               25000.          .800           491.        13.03   2149.716          .04089

      .389    2.1913            495775.    8.433           23200.          .603           365.         4.02   1710.297          .04049

      .755    4.8626            495765.   19.07            22009.          .585           376.        -4.19   1739.287          .04089

     1.213    7.5376            495753.   30.44            20898.          .566           346.        -4.18   1795.547          .04142

     1.687    10.222            495741.   42.56            19720.          .547           336.        -4.17   1853.176          .04207

     2.176    12.913            495728.   55.49            18517.          .528           326.        -4.16   1913.537          .04250

     2.682    15.611            495714.   69.32            17326.          .509           315.        -4.17   1975.411          .04283

     3.207    18.312            495700.   84.12            16136.          .488           304.        -4.15   2039.267          .04302

     3.752    21.017            495684.   99.90            14945.          .467           293.        -5.56   2104.766          .04309

     4.292    23.714            495667.   116.6            12925.          .494           312.        -5.43   2272.673          .04764

     4.828    26.435            495650.   134.1            11915.          .471           298.        -4.63   2336.388          .04789

     5.390    29.160            495631.   152.9            10998.          .452           288.        -4.36   2411.818          .04723

     5.971    31.910            495611.   173.1             9275.          .439           281.        -4.60   2501.902          .04780

     6.566    34.662            495589.   194.5             7914.          .429           275.        -4.61   2599.743          .04865

     7.175    37.418            495566.   217.4             6573.          .417           269.        -4.66   2690.276          .04928

     7.808    40.184            495542.   241.7             5209.          .406           264.        -4.63   2802.371          .04991

     8.441    42.959            495516.   267.6             3847.          .396           258.        -4.61   2907.009          .05099

     9.098    45.743            495488.   295.2             2485.          .385           252.        -4.62   3013.322          .05264

     9.771    48.537            495459.   324.6             1105.          .375           247.        -4.13   3125.064          .05436

    10.486    51.329            495427.   356.5               50.          .342           226.        -1.78   3190.471          .05234

    10.711    51.716            495417.   366.6               50.          .200           132.         0.00   1616.374          .03480
 62. ****** XCLECT END     OPTION    1 ******
                              WT     =   .49542E+06       H      =    50.000          AM     =   .20000

                              TIME   =   3.5696          RANGE =    7380.0          FUEL   =   3920.7

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    98.795          CPU TIME USED IN PREVIOUS TASK =   4.0590

  RGSAVE
ITZ            WT              H             AM        TAC***         FUEL        RUN***         XN77   E16   E11 OPTION
211    .4954E+06    50.00        .2000       .1024        366.6         52.10         1.000        -0.    0.      1

UNPACK         221      51210           5          1          2          10         10.          22
  1.0000       2.0000       7350.0       4.0000       20.009           51210 0.                      22  2.0000       1111111111
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             NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                  01/14/77             10.24.07.          PAGE   67

                                            LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                            ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                            FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                        MISSION SEGMENT TABLE

          .22000     0.         .81500E+06  6.0100     1200.0     .50000E-01  1.0000      100.00           0
   2      4.0000     .40000     6.0000     .32600E+06  99120.          51000 0.                  21         0  1111111111
   3     0.         0.         0.          5.0000      2.0000          51000  2.0000             17         0  1111111111
   4     0.         0.         .82949E+06 0.          0.               51000 0.                  13         0  1111111111
   5      .50000    3000.0     0.          4.0000     0.               51100 0.                   1         0  1111111111
   6      .60000    5000.0     0.          4.0000     0.               51100 0.                   1         0  1111111111
   7      .80000    21500.     0.          4.0000     0.               51100 0.                   1         0  1111111111
   8      .95000    29000.     0.          4.0000     0.               51100 0.                   1         0  1111111111
   9     1.5000     40500.     0.          4.0000     0.               51100 0.                   1         0  1111111111
  10     2.6000     52971.     0.          4.0000     0.               51100 0.                   1         0  1111111111
  11     5.9500     87990.     0.          5.0000     0.               51100 0.                   1         0  1111111111
  12     5.9900     99120.     0.          4.0000     0.               51100 0.                   1         0  1111111111
  13     5.0000     .40000     6.0000     0.          -99120.          51100 0.                  21         0  1111111111
  14     0.         0.         0.          5.0000     12.000           51100 0.                  22         X  1111111111
  15     0.         0.         .53000E+06 0.          0.               51010  1.0000              6         0  1111111111
  16      .80000    20000.     3.9000      1.0000     0.               51210 0.                   1         0  1111111111
  17     0.         0.         0.          5.0000      1.0000          51010  2.0000             17         0  1111111111
  18      .80000    45000.     3.0000      4.0000     0.               51110 0.                   1         0  1111111111
  19     0.         0.         0.          1.0000      200.00          51010 0.                   7         0  1111111111
  20      .80000    20000.     3.0000      1.0000     0.               51210 0.                   1         0  1111111111
  21     0.         0.         0.          5.0000      1.0000          51010  2.0000             17         0  1111111111
  22      .20000    50.000     3.0000      1.0000     0.               51210 0.                   1         0  1111111111
  23     1.3000     2.0000     7350.0      4.0000      20.000          51210 0.                  22         X  1111111111
  24     0.         0.         0.         0.           1.0000          51210  4.0000             17         0  1111111111
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                                                   LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                   ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                   FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


 DUMPRG

SEG      WT              H              AM        TIME          FUEL        RANGE          XNZZ       E10    E11 OPTION
  1   .8150E+06  0.               .2000     0.            0.          0.             1.000       0.     0.       X
  2   .8150E+06  0.               .2000     0.            0.          0.             1.000      -0.     0.      21
  3   .8134E+06   50.00           .2064      .8333E-01   1610.        0.             1.000      -0.     0.      17
  4   .8300E+06   50.00           .2064     0.            0.          0.             1.000      -0.     0.      13
  5   .8250E+06   3000.           .5000      .2225E-01   4930.         4.720         1.000      -0.     0.       1
  6   .8236E+06   5000.           .6000      .6500E-02   1464.         2.385         1.000      -0.     0.       1
  7   .8178E+06   .2150E+05       .8000      .3500E-01   6537.         15.63         1.000      -0.     0.       1
  8   .8125E+06   .2900E+05       .9500      .2536E-01   4536.         13.37         1.000      -0.     0.       1
  9   .7924E+06   .4850E+05      1.500       .1004        .2016E+05    74.40         1.000      -0.     0.       1
 10   .7779E+06   .5297E+05      2.600       .4420E-01    .1441E+05    49.05         1.000      -0.     0.       1
 11   .7364E+06   .8799E+05      5.950       .1379        .4157E+05    361.6         1.000      -0.     0.       1
 12   .7337E+06   .9912E+05      5.990       .1307E-01   2664.         45.60         1.000      -0.     0.       1
 13   .7337E+06   .9912E+05      5.990      0.            2664.       0.             1.000      -0.     0.      21
 14   .7337E+06   .9912E+05      5.990      0.            2664.       0.             1.000      -0.     0.      22
 15   .5300E+06   .9912E+05      5.091       1.052        .2037E+06    6090.         1.000      -0.     0.       6
 16   .5260E+06   .2000E+05       .8000      .4074        3160.        439.3         1.000      -0.     0.       1
 17   .5229E+06   .2000E+05       .8000      .8333E-01   3959.        0.             1.000      -0.     0.      17
 18   .5175E+06   .4500E+05       .8000      .6020E-01   5306.         31.20         1.000      -0.     0.       1
 19   .5026E+06   .4500E+05       .8000      .4362        .1492E+05    200.0         1.000      -0.     0.       7
 20   .4997E+06   .2000E+05       .8000      .1619        2973.         69.56         1.000      -0.     0.       1
 21   .4950E+06   .2000E+05       .8000      .8333E-01   3921.        0.             1.000      -0.     0.      17
 22   .4954E+06   50.00           .2000      .1024        366.6         52.10         1.000      -0.     0.       1
 23 -0.          -0.            -0.        -0.           -0.          -0.           -0.           2.    -0.      -0
 24 -0.          -0.            -0.        -0.           -0.          -0.           -0.          -0.    -0.      -0
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  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/14/77          10.24.09.         PAGE   69

                                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                           LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAM7D        NET THRUST       SFC

   0.000   0.               829487.   0.                50.        .206        136.        3.91   303110.0       .73103

    .151    .35536          828928.    559.2           197.        .221        146.        4.32   304305.7       .72744

    .268    .64818          828496.    990.5           345.        .236        156.        5.03   306717.3       .72117

    .366    .90025          828136.   1351.            492.        .250        165.        5.54   308270.8       .71713

    .452   1.1491           827822.   1665.            640.        .265        175.        5.90   309282.2       .71457

    .529   1.3781           827538.   1949.            788.        .280        184.        6.15   309921.6       .71302

    .599   1.5997           827278.   2209.            935.        .294        194.        6.31   310324.3       .71217

    .665   1.8167           827035.   2452.           1082.        .309        204.        6.41   310547.1       .71187

    .727   2.0314           826806.   2681.           1230.        .324        213.        6.46   310620.6       .71201

    .787   2.2452           826587.   2900.           1377.        .339        223.        6.47   310698.4       .71239

    .843   2.4590           826378.   3109.           1525.        .353        232.        6.46   310735.0       .71297

    .898   2.6737           826176.   3311.           1672.        .368        242.        6.43   310784.0       .71368

    .951   2.8898           825980.   3507.           1820.        .383        251.        6.38   310853.1       .71449

   1.002   3.1078           825790.   3697.           1967.        .397        261.        6.32   310953.4       .71538

   1.052   3.3281           825604.   3883.           2115.        .412        270.        6.25   311095.5       .71631

   1.101   3.5511           825422.   4065.           2262.        .427        280.        6.17   311282.9       .71728

   1.149   3.7769           825243.   4244.           2410.        .441        289.        6.09   311519.7       .71827

   1.196   4.0059           825068.   4419.           2557.        .456        299.        6.00   311819.5       .71927

   1.242   4.2382           824895.   4592.           2705.        .471        308.        5.92   312175.9       .72018

   1.288   4.4741           824724.   4762.           2852.        .485        318.        5.83   312586.1       .72117

   1.333   4.7136           824556.   4931.           3000.        .500        327.        5.74   313054.2       .72215
 65. ****** XCLECT END     OPTION   1 ******
                       WT     =    .82456E+06     H     =   3000.0         AM     =   .50000

                       TIME   =    .83333E-01    RANGE =  0.               FUEL   =  0.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    92.897          CPU TIME USED IN PREVIOUS TASK =   1.1180

 RGSAVE
ITZ           WT            H            AM       TAC***         FUEL       RUN***         XNZZ    E16    E11 OPTION
 41   .8246E+06   3000.        .5000       .2221E-01   4931.        4.714        1.000        -0.     0.     1


UNPACK         51      51100          5          1        1          0        0.          1
  .60000       5000.0     0.            4.6000     0.                  51100 0.                  1 0.           1111111111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77          10.24.11.          PAGE   78

                                    LRC TEST PROBLEM NUMBER 3  ------  NSEG III
                                    ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                    FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                         LINEAR MACH ALTITUDE CLIMB PATH HISTORY
  TIME         RANGE          WEIGHT       FUEL          ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST        SFC

    0.000    0.                824556.   0.                3000.         .500         327.        8.57   313076.3        .72218

     .020     .10              824480.    75.96            3100.         .505         330.        8.54   312818.2        .72231

     .041     .21098           824404.   151.5             3200.         .510         333.        8.50   312566.2        .72257

     .060     .32938           824329.   226.8             3300.         .515         337.        8.45   312323.3        .72280

     .080     .44030           824254.   301.7             3400.         .520         340.        8.41   312089.5        .72303

     .100     .55199           824180.   376.2             3500.         .525         343.        8.36   311864.8        .72325

     .120     .66422           824105.   450.5             3600.         .530         346.        8.31   311649.2        .72347

     .139     .77707           824031.   524.5             3700.         .535         349.        8.27   311442.6        .72369

     .159     .89054           823958.   598.1             3800.         .540         352.        8.22   311245.0        .72390

     .179    1.0046            823884.   671.5             3900.         .545         355.        8.18   311037.4        .72412

     .198    1.1194            823811.   744.7             4000.         .550         359.        8.13   310829.1        .72434

     .217    1.2348            823738.   817.5             4100.         .555         362.        8.09   310641.2        .72455

     .237    1.3508            823666.   890.1             4200.         .560         365.        8.05   310462.3        .72475

     .256    1.4675            823593.   962.5             4300.         .565         368.        8.00   310292.5        .72495

     .275    1.5848            823521.   1035.             4400.         .570         371.        7.96   310131.7        .72515

     .295    1.7028            823449.   1107.             4500.         .575         374.        7.91   309979.8        .72534

     .314    1.8215            823378.   1178.             4600.         .580         377.        7.87   309836.9        .72553

     .333    1.9408            823306.   1250.             4700.         .585         380.        7.83   309742.9        .72571

     .352    2.0608            823235.   1321.             4800.         .590         384.        7.79   309577.7        .72589

     .371    2.1814            823164.   1392.             4900.         .595         387.        7.74   309461.3        .72606

     .390    2.3027            823093.   1463.             5000.         .600         390.        7.72   309353.7        .72623
 66. ****** XCLECT END     OPTION   1 ******
                     WT     =   .82309E+06     H      =    5000.0          AM     =    .60000

                     TIME   =   .10595         RANGE  =    4.7136          FUEL   =    4931.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    93.239          CPU TIME USED IN PREVIOUS TASK =    1.1420

 RGSAVE
ITZ         WT               H              AM        TAC***          FUEL       RUN***          XNZZ   E10    F11 OPTION
 51    .8231E+06    5000.         .6000         .6495E-02    1463.        2.303         1.000          -0.     0.      1

UNPACK          61      51100          5          1          1          0          0.          1
  .00000        21500.      0.              4.0000      0.                  51100 0.                         1 0.          1111111111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/14/77          10.24.14.          PAGE   71

                                                   LRC TEST PROBLEM NUMBER 3  ------  NSEG III
                                                   ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                   FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                        LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)    GAMZD         NET THRUST        SFC

   0.000    0.               823093.   0.                 5000.          .600          390.        13.01   309352.5        .72623

    .092     .58745          822751.    341.8             5825.          .610          395.        12.83   303659.2        .72530

    .186    1.1914           822412.    681.2             6650.          .620          400.        12.50   298180.4        .72430

    .280    1.8122           822075.   1018.              7475.          .630          406.        12.16   292650.5        .72335

    .376    2.4505           821740.   1353.              8300.          .640          411.        11.84   287265.9        .72235

    .473    3.1069           821407.   1687.              9125.          .650          416.        11.52   281982.1        .72131

    .572    3.7817           821075.   2018.              9950.          .660          421.        11.22   276721.3        .72020

    .672    4.4758           820746.   2347.             10775.          .670          426.        10.91   271639.2        .71910

    .774    5.1894           820418.   2675.             11600.          .680          431.        10.62   266592.7        .71800

    .877    5.9234           820092.   3001.             12425.          .690          436.        10.33   261649.0        .71694

    .982    6.6785           819767.   3326.             13250.          .700          441.        10.04   256653.3        .71605

   1.089    7.4559           819444.   3649.             14075.          .710          446.         9.76   251671.5        .71529

   1.197    8.2567           819121.   3972.             14900.          .720          451.         9.48   246018.4        .71447

   1.308    9.0814           818799.   4294.             15725.          .730          456.         9.21   242081.3        .71364

   1.421    9.9311           818478.   4615.             16550.          .740          461.         8.94   237284.6        .71278

   1.536   10.807            818158.   4935.             17375.          .750          465.         8.68   232603.8        .71192

   1.653   11.709            817838.   5255.             18200.          .760          470.         8.42   227999.4        .71104

   1.772   12.640            817519.   5574.             19025.          .770          475.         8.17   223465.6        .71013

   1.894   13.601            817199.   5894.             19850.          .780          479.         7.92   219040.3        .70917

   2.019   14.591            816880.   6213.             20675.          .790          484.         7.68   214706.3        .70817

   2.146   15.614            816561.   6532.             21500.          .800          488.         7.56   210322.5        .70717
 67. ****** XCLECT END     OPTION   1 ******
                        WT      =    .81656E+06      H      =    21500.          AM     =    .00000

                        TIME    =    .11204          RANGE  =    7.0163          FUEL   =    1462.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    94.409           CPU TIME USED IN PREVIOUS TASK =    1.1700

 RGSAVE
ITZ          WT            H             AM         TAC***          FUEL         RUN***          XNZZ    E16    E11 OPTION
 .1    .8164E+06    .2150E+05    .0000         .3577E-01    6532.        15.61          1.000      -0.     0.      1

UNPACK          71       51100           9           1           1           0          0.          1
  .95000        29000.       0.              4.0000      0.                  51100 0.                        1 0.            1111111111
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HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                      01/14/77            10.24.16.          PAGE   72

                                          LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                               LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME          RANGE          WEIGHT        FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAMTD          NET THRUST          SFC

    0.000   0.                 816561.   0.                21500.          .800          488.          7.18  218318.7         .78719

     .061    .49514            816373.   187.9             21875.          .807          492.          7.16  231786.0         .84772

     .121    .98220            816179.   382.4             22250.          .815          496.          7.13  230226.0         .84509

     .181   1.4821             815983.   578.5             22625.          .822          500.          6.96  228640.5         .84485

     .243   1.9953             815784.   776.5             23000.          .830          503.          6.76  227100.0         .84219

     .306   2.5225             815584.   976.6             23375.          .837          507.          6.58  225501.5         .84020

     .371   3.0643             815382.   1179.             23750.          .845          511.          6.40  224026.0         .83841

     .436   3.6210             815178.   1383.             24125.          .852          515.          6.22  222467.2         .83655

     .503   4.1955             814971.   1590.             24500.          .860          518.          6.05  220937.7         .83465

     .572   4.7864             814761.   1800.             24875.          .867          522.          5.87  219441.4         .83271

     .642   5.3956             814549.   2012.             25250.          .875          526.          5.70  217926.9         .83081

     .714   6.0233             814333.   2228.             25625.          .882          529.          5.52  216457.4         .82887

     .787   6.6712             814115.   2446.             26000.          .890          533.          5.35  215005.4         .82691

     .862   7.3401             813892.   2669.             26375.          .897          537.          5.17  213561.5         .82492

     .940   8.0361             813665.   2896.             26750.          .905          540.          4.92  212073.1         .82296

    1.022   8.7742             813429.   3133.             27125.          .912          544.          4.63  210613.6         .82095

    1.109   9.5612             813179.   3382.             27500.          .920          548.          4.33  209191.1         .81892

    1.201   10.404             812917.   3644.             27875.          .927          551.          4.04  207749.7         .81689

    1.300   11.319             812639.   3922.             28250.          .935          555.          3.75  206313.9         .81489

    1.405   12.288             812344.   4217.             28625.          .942          558.          3.46  204904.5         .81285

    1.520   13.352             812029.   4532.             29000.          .950          562.          3.32  203521.6         .81079
 60. ****** SELECT END    OPTION   1 ******
                          WT     =   .81203E+06      H      =   29000.          AM     =   .95000

                          TIME   =   .14701          RANGE =   22.630          FUEL   =   6532.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   95.595           CPU TIME USED IN PREVIOUS TASK =   1.1060

 RGSAVE
ITZ          WT           H           AM        TSC***        FUEL       RUN***        XNZZ   E10    E11 OPTION
 71    .8120E+06    .2900E+05   .9500        .2533E-01    4532.        13.35        1.000    -0.     0.      1

UNPACK          01      51150          5          1          1          0          0.          1
  1.5000       48500.      0.             4.3000      0.               51100 0.                      1 0.            1111111111
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     NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77          10.24.28.          PAGE   73

                                             LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                             ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                             FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                  LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMPD        NET THRUST        SFC

     0.000   0.               812029.   0.             29000.        .950        562.        1.87   203521.2        .81079

      .306    2.9013          811183.    846.4         29575.        .977        577.        1.78   205077.8        .81125

      .667    6.4132          810172.   1857.          30150.       1.005        592.        1.44   207647.2        .81429

     1.073   10.466           809021.   3009.          30725.       1.032        606.        1.27   206479.5        .82956

     1.511   14.969           807760.   4269.          31300.       1.060        621.        1.15   205549.3        .84407

     1.985   19.965           806382.   5647.          31875.       1.087        635.        1.13   204096.3        .85766

     2.422   24.505           805091.   6938.          32450.       1.115        650.        1.16   200721.2        .86409

     2.845   29.216           803824.   8205.          33025.       1.142        664.        1.19   204910.3        .88212

     3.246   33.700           802608.   9421.          33600.       1.170        678.        1.25   202407.2        .90457

     3.616   37.919           801473.   .1056E+05      34175.       1.197        692.        1.30   200792.7        .92427

     3.968   42.023           800376.   .1165E+05      34750.       1.225        706.        1.31   199741.2        .94159

     4.321   46.222           799262.   .1277E+05      35325.       1.252        720.        1.28   199095.3        .95697

     4.672   50.473           798141.   .1389E+05      35900.       1.280        734.        1.24   198940.1        .97037

     5.030   54.997           796954.   .1508E+05      36475.       1.307        749.        1.34   199366.5        .98486

     5.329   58.657           795995.   .1603E+05      37050.       1.335        765.        1.63   220117.1        .98987

     5.564   61.696           795288.   .1683E+05      37625.       1.362        781.        1.86   227862.2        .99095

     5.778   64.503           794467.   .1756E+05      38200.       1.390        797.        1.99   232959.3        .99272

     5.974   67.130           793779.   .1825E+05      38775.       1.417        813.        2.11   238405.3        .88855

     6.150   69.650           793124.   .1891E+05      39350.       1.445        828.        2.28   243466.9        .88601

     6.331   72.058           792496.   .1953E+05      39925.       1.472        844.        2.30   248494.6        .88376

     6.494   74.369           791895.   .2013E+05      40500.       1.500        860.        2.34   253539.2        .88194
  69. ****** XCLECT END     OPTION   1 ******
                          WT     =   .79109E+06      H     =   40500.          AM     =   1.5000

                          TIME   =   .17314         RANGE =   35.902          FUEL   =   4532.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



  CUMULATIVE CPU TIME =    97.269          CPU TIME USED IN PREVIOUS TASK =   1.6748

  RGSAVE
 ITZ          WT            H            AM       TAC***        FUEL       RUN***        XNZZ    E10    E11 OPTION
  01   .7911E+06   .4050E+05   1.500        .1082        .2013E+05   74.37        1.000       -0.     0.     1

 UNPACK        91      51100          5          1         1         0         0.          1
   2.0000      52971.      0.            4.0000      0.              51100 0.                        1 0.            1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77            10.24.24.          PAGE   74

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                            LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.     V (KNOTS)    GAMTD       NET THRUST       SFC

    0.000   0.             791895.   0.              40500.        1.500          860.         1.50   253560.3       .08141

     .252    3.6681        790931.    964.2          41124.        1.555          891.         1.60   269804.0       .07731

     .472    6.9578        790037.   1858.           41747.        1.610          923.         1.84   286546.9       .07263

     .667   10.051         789202.   2693.           42371.        1.665          954.         2.00   303158.9       .06904

     .842   12.874         788414.   3481.           42994.        1.720          986.         2.16   320034.3       .06712

    1.000   15.508         787668.   4227.           43618.        1.775         1017.         2.32   337790.1       .06390

    1.142   17.953         786959.   4936.           44241.        1.830         1049.         2.47   354949.3       .06103

    1.272   20.257         786281.   5613.           44865.        1.885         1080.         2.63   372727.3       .05834

    1.391   22.420         785633.   6262.              88.        1.940         1112.         2.78   392029.9       .05503

    1.501   24.486         785009.   6886.           46112.        1.995         1144.         2.87   407306.0       .05293

    1.606   26.524         784392.   7503.           46735.        2.050         1175.         2.87   410208.1       .05024

    1.710   28.504         783765.   8129.           47359.        2.105         1207.         2.84   433097.9       .04879

    1.812   30.663         783130.   8765.           47983.        2.160         1238.         2.81   447587.3       .04743

    1.913   32.763         782484.   9411.           48606.        2.215         1270.         2.77   462104.2       .04534

    2.013   34.908         781826.   .1007E+05       49230.        2.270         1301.         2.67   469502.7       .04242

    2.116   37.162         781147.   .1075E+05       49853.        2.325         1333.         2.53   473190.2       .04092

    2.222   39.546         780441.   .1145E+05       50477.        2.380         1364.         2.40   476777.1       .03902

    2.332   42.060         779710.   .1219E+05       51100.        2.435         1396.         2.28   485706.3       .03695

    2.444   44.696         778950.   .1294E+05       51724.        2.490         1427.         2.24   491569.7       .03524

    2.552   47.302         778201.   .1369E+05       52347.        2.545         1459.         2.33   502217.9       .03336

    2.652   49.752         777499.   .1440E+05       52971.        2.600         1490.         2.46   512508.6       .03190
 70. ****** XCLECT END     OPTION   1 ******
                    WT     =   .77750E+06     H     =   52971.         AM    =   2.6000

                    TIME   =   .20137         RANGE =   110.35         FUEL  =   20134.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    99.345          CPU TIME USED IN PREVIOUS TASK =   2.0760

 RGSAVE
ITZ           WT              H              AM       TAC***         FUEL       RUN***            RNZZ    E16    E11 OPTION
 91   .7775E+06    .5297E+05    2.600          .4420E-01    .1440E+05    49.75          1.000         -0.     0.     1

UNPACK        101      51100            5         1         1         0         0.          1
  9.9900       87990.      0.             5.0000       0.                     51100 0.                        1 0.         1111111111
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HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/14/77          10.24.27.          PAGE   75

                                    LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                    ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                    FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                     CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST      SFC

     0.000   0.              777499.   0.              52971.       2.600        1490.         3.83   512490.5       .83149

      .171    4.3073         776287.    1211.          54722.       2.695        1545.         3.63   512777.3       .82940

      .353    9.0966         774990.    2509.          56473.       2.811        1611.         3.38   505169.3       .82700

      .534    14.059         773757.    3742.          58224.       2.932        1681.         3.10   485296.5       .83157

      .724    19.403         772501.    4998.          59975.       3.050        1753.         2.73   423360.5       .91990

      .952    26.275         771056.    6443.          61726.       3.190        1830.         2.38   409090.0       .91691

     1.197    33.004         769545.    7954.          63477.       3.327        1907.         2.05   396500.1       .91917

     1.468    42.420         767970.    9529.          65228.       3.470        1989.         1.80   383278.0       .91940

     1.751    52.270         766306.   .1119E+05       66979.       3.619        2076.         1.57   369203.3       .91703

     2.069    63.531         764539.   .1296E+05       68730.       3.774        2165.         1.38   355460.6       .92105

     2.414    76.287         762642.   .1486E+05       70481.       3.935        2263.         1.22   342909.1       .92479

     2.780    90.604         760736.   .1676E+05       72231.       4.103        2363.         1.08   331997.9       .92065

     3.190    106.67         758695.   .1880E+05       73982.       4.278        2467.          .96   321616.0       .93557

     3.625    125.12         756547.   .2095E+05       75733.       4.460        2574.          .85   311091.0       .94679

     4.090    145.86         754247.   .2325E+05       77484.       4.649        2687.          .76   298413.5       .96100

     4.620    169.76         751784.   .2572E+05       79235.       4.845        2804.          .64   285534.9       .97740

     5.200    197.43         749123.   .2838E+05       80986.       5.049        2925.          .56   272028.9       .99679

     5.844    229.52         746241.   .3126E+05       82737.       5.262        3052.          .48   261119.1      1.0150

     6.559    266.69         743120.   .3438E+05       84488.       5.482        3184.          .41   251204.5      1.0389

     7.357    309.94         739722.   .3778E+05       86239.       5.712        3321.          .35   239105.0      1.0552

     8.254    360.71         735990.   .4151E+05       87990.       5.950        3464.          .32   228996.0      1.0703
 71. ****** SELECT END    OPTION   1 ******
                    WT    =   .73599E+06     H     =   87990.        AM    =   5.9500

                    TIME  =   .32550       RANGE =   160.10        FUEL  =   14396.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   100.06         CPU TIME USED IN PREVIOUS TASK =   1.4680

 RGSAVE
ITZ          WS            H          AM       TAC***         FUEL       RUN***         XNZZ   E10   E11 OPTION
101   .7360E+06   .8799E+05   5.950        .1376       .4151E+05   360.7         1.000        -0.    0.      1


UNPACK       111      51100         5         1         1         0         0.         1
  5.9900       99120.      0.           4.0000      0.                 51100 0.                      1 0.          1111111111
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                          LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                 LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMPD        NET THRUST     SFC

   0.000  0.              735990.   0.              87990.       5.950       3464.        3.31  224453.0       1.0783
    .027   1.5843         735878.    112.0          88546.       5.952       3466.        3.26  223400.0       1.0778
    .056   3.2160         735766.    224.5          89103.       5.954       3469.        3.16  219959.5       1.0774
    .085   4.9033         735651.    338.7          89659.       5.956       3471.        3.06  215739.1       1.0769
    .115   6.6364         735536.    454.4          90216.       5.958       3474.        2.97  212023.0       1.0765
    .146   8.4292         735418.    571.6          90772.       5.960       3476.        2.88  208411.0       1.0761
    .178   10.281         735299.    690.6          91329.       5.962       3479.        2.78  204897.9       1.0757
    .211   12.197         735179.    811.3          91885.       5.964       3481.        2.69  201481.9       1.0753
    .245   14.179         735056.    934.1          92442.       5.966       3484.        2.60  198160.5       1.0749
    .281   16.232         734931.    1059.          92998.       5.968       3486.        2.51  194931.2       1.0745
    .317   18.361         734804.    1186.          93555.       5.970       3489.        2.42  191791.6       1.0741
    .355   20.571         734674.    1316.          94111.       5.972       3491.        2.33  188738.9       1.0737
    .395   22.869         734541.    1449.          94668.       5.974       3494.        2.24  185771.2       1.0733
    .436   25.263         734405.    1585.          95224.       5.976       3496.        2.15  182886.1       1.0730
    .479   27.756         734266.    1725.          95781.       5.978       3499.        2.06  180081.2       1.0726
    .523   30.357         734122.    1868.          96337.       5.980       3501.        1.97  177354.5       1.0723
    .572   33.080         733975.    2015.          96894.       5.982       3503.        1.88  174703.6       1.0719
    .619   35.935         733823.    2167.          97450.       5.984       3506.        1.79  172126.6       1.0716
    .670   38.935         733666.    2324.          98007.       5.986       3508.        1.70  169621.2       1.0713
    .724   42.094         733503.    2487.          98563.       5.988       3511.        1.62  167185.3       1.0709
    .781   45.432         733333.    2657.          99120.       5.990       3513.        1.57  164817.0       1.0706
72. ****** XCLECT END     OPTION   1 ******
                   WT    =   .73333E+06      H     =    99120.        AM     =    5.9900

                   TIME  =   .46315          RANGE =    520.82        FUEL   =    41509.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    112.55           CPU TIME USED IN PREVIOUS TASK =    1.7420

 RGSAVE
ITZ         WT            H          AM        TAC***        FUEL       RU***          XNZZ    E10    E11 OPTION
111    .7333E+06    .9912E+05   5.990       .1302E-01    2657.       45.43         1.000       -0.     5.      1

UNPACK         121       51100          5          1          1          0         0.         21
  5.0000        .46000        6.0006      0.            -99120.          51100 0.                  21 0.            1111111111
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              RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER

RAMJET GROSS THRUST - - - - - - - - - - - -   41492.6      (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -   41336.1      (LB)
AIRFLOW RATE  - - - - - - - - - - - - - -   420.221      (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - -   12.2785      (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - -   3381.58      (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - -     1.000      (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - -   90120.0      (FEET)
SCALING MACH NUMBER - - - - - - - - - - -     6.000      (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - -   421.727      (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - -   5.[illegible]36      (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - -.700000      (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - -  6.00000      (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -  41336.1      (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - -   3673.05      (LB)
INLET SPILLAGE DRAG - - - - - - - - - - -   .404232E-10 (LB)
ENGINE INLET AREA - - - - - - - - - - - -    48.767      (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - -      .996      (NO UNITS)
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                          LRC TEST PROBLEM NUMBER 3  -----  WSEG III
                          ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                          FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                         MISSION SEGMENT TABLE

          .20000     0.          .91500E+06  6.0100      1281.1      .50000E-01  1.0000      100.00            0
  2      4.0000       .40000    6.0000      .32600E+06  99120.           51000 0.                   21       0  11111111111
  3      0.          0.         0.          5.0000      2.0000           51000  2.0000              17       0  11111111111
  4      0.          0.          .82940E+06 0.          0.               51000 0.                   13       0  11111111111
  5       .90000     3000.0     0.          4.0000      0.               51100 0.                    1       0  11111111111
  6       .60000     5000.0     0.          4.0000      0.               51100 0.                    1       0  11111111111
  7       .80000     21500.     0.          4.0000      0.               51100 0.                    1       0  11111111111
  8       .95000     29000.     0.          4.0000      0.               51100 0.                    1       0  11111111111
  9      1.5000      40500.     0.          4.0000      0.               51100 0.                    1       0  11111111111
 10      2.6000      52971.     0.          4.0000      0.               51100 0.                    1       0  11111111111
 11      5.9500      87990.     0.          5.0000      0.               51100 0.                    1       0  11111111111
 12      5.9900      99120.     0.          4.0000      0.               51100 0.                    1       0  11111111111
 13      5.0000       .40000    6.0000      0.         -99120.           51100 0.                   21       0  11111111111
 14      0.          0.         0.          5.0000      12.000           51100 0.                   22       1  11111111111
 15      0.          0.          .53600E+06 0.          0.               51010  1.0000               6       0  11111111111
 16       .80000     27000.     3.0000      1.0000      0.               51210 0.                    1       0  11111111111
 17      0.          0.         0.          5.0000      1.0000           51010  2.0000              17       0  11111111111
 18       .85000     45200.     3.0000      4.0000      0.               51110 0.                    1       0  11111111111
 19      0.          0.         0.          1.0000      200.00           51010 0.                    7       0  11111111111
 20       .90000     28000.     3.0000      1.0000      0.               51210 0.                    1       0  11111111111
 21      0.          0.         0.          5.0000      1.0000           51010  2.0000              17       0  11111111111
 22       .22000     50.000     3.0000      1.0000      0.               51250 0.                    1       0  11111111111
 23      1.0000      2.0000     7350.0      4.0000      20.000           51210 0.                   22       1  11111111111
 24      0.          0.         0.          0.          1.0000           51210  4.0000              17       0  11111111111
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                                   LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                   ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                   FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


 DUMPRG

SEG      WT            H              XM        TIME          FUEL        RANGE          XNZZ       E10    E11 OPTION
  1   .8150E+06  0.             .2000     0.            0.          0.              1.000        0.     0.     8
  2   .8150E+06  0.             .2000     0.            0.          0.              1.000       -0.     0.    21
  3   .8134E+06   50.00         .2044      .8333E-01   1610.        0.              1.000       -0.     0.    17
  4   .8295E+06   50.00         .2044     0.            0.          0.              1.000       -0.     0.    13
  5   .8246E+06   3000.         .5000      .2221E-01   4931.         4.714          1.000       -0.     0.     1
  6   .8231E+06   5000.         .6000      .6495E-02   1463.         2.383          1.000       -0.     0.     1
  7   .8166E+06   .2150E+05     .8000      .3577E-01   6532.         15.61          1.000       -2.     0.     1
  8   .8122E+06   .2900E+05     .9500      .2533E-01   4532.         13.35          1.000       -0.     0.     1
  9   .7919E+06   .4050E+05    1.500       .1802       .2013E+05    74.37          1.000       -0.     0.     1
 10   .7775E+06   .5297E+05    2.600       .4420E-01   .1440E+05    69.75          1.000       -0.     0.     1
 11   .7360E+06   .8799E+05    5.950       .1376       .4151E+05    368.7          1.000       -0.     0.     1
 12   .7333E+06   .9912E+05    5.990       .1382E-01   2657.        45.43          1.000       -0.     0.     1
 13   .7333E+06   .9912E+05    5.990      0.           2657.        0.              1.000       -0.     0.    21
 14   .7337E+06   .9912E+05    5.990      0.           2664.        0.              1.000        1.     0.    22
 15   .5300E+06   .9912E+05    5.891      1.052        .2037E+06    6000.          1.000       -0.     0.     6
 16   .5268E+06   .2660E+05     .8600      .4076       3168.         439.3          1.000       -0.     0.     1
 17   .5229E+06   .2000E+05     .8000      .8333E-01   3959.        0.              1.000       -0.     0.    17
 18   .5175E+06   .4500E+05     .8000      .6020E-01   5306.         31.20          1.000       -0.     0.     1
 19   .5026E+06   .4500E+05     .8000      .4362       .1492E+05    200.0          1.000       -0.     0.     7
 20   .4997E+06   .2800E+05     .8000      .1619       2973.         69.56          1.000       -0.     0.     1
 21   .4958E+06   .2000E+05     .8000      .8333E-01   3921.        0.              1.000       -0.     0.    17
 22   .4954E+06   50.00         .2000      .1024       366.6         52.10          1.000       -0.     0.     1
 23 -0.         -0.          -0.        -0.          -0.         -0.           -0.              2.    -0.    -0
 24 -0.         -0.          -0.        -0.          -0.         -0.           -0.             -0.    -0.    -0
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77           10.24.33.          PAGE   79

                                     LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                     ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                     FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME         RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   SAMTO        NET THRUST       SFC

     0.000   0.               829487.  0.                 50.        .204         130.         3.91   303118.0        .73183

      .151    .35526          828928.   559.2            197.        .221         140.         4.32   304385.7        .72744

      .260    .64818          828496.   991.5            345.        .236         150.         5.03   306717.8        .72117

      .366    .90825          828136.   1351.            492.        .250         165.         5.54   308270.0        .71713

      .452   1.1491           827822.   1665.            640.        .265         175.         5.90   309287.2        .71457

      .529   1.3781           827538.   1949.            788.        .280         184.         6.15   309921.6        .71307

      .599   1.5997           827278.   2209.            935.        .294         194.         6.31   310324.3        .71217

      .665   1.8167           827035.   2452.           1082.        .309         204.         6.41   310547.1        .71187

      .727   2.0314           826806.   2681.           1230.        .324         213.         6.46   310620.6        .71201

      .787   2.2452           826587.   2900.           1377.        .339         223.         6.47   310698.4        .71239

      .843   2.4592           826378.   3109.           1525.        .353         232.         6.46   310735.8        .71297

      .898   2.6737           826176.   3311.           1672.        .368         242.         6.43   310704.8        .71368

      .951   2.8890           825980.   3507.           1820.        .383         251.         6.38   310853.1        .71449

     1.002   3.1070           825790.   3697.           1967.        .397         261.         6.32   310953.4        .71538

     1.052   3.3281           825604.   3883.           2115.        .412         270.         6.25   311095.5        .71631

     1.101   3.5511           825422.   4065.           2262.        .427         280.         6.17   311282.9        .71728

     1.149   3.7769           825243.   4244.           2410.        .441         289.         6.09   311519.7        .71827

     1.196   4.0059           825068.   4419.           2557.        .456         299.         6.01   311819.5        .71927

     1.242   4.2382           824895.   4592.           2705.        .471         308.         5.92   312175.9        .72018

     1.288   4.4741           824724.   4762.           2852.        .485         318.         5.83   312586.1        .72117

     1.333   4.7136           824556.   4931.           3000.        .500         327.         5.74   313054.2        .72219
 75. ****** XSELECT END    OPTION   1 ******
                   WT    =   .82456E+06     H     =    3000.0        AM    =   .50000

                   TIME  =   .83333E-01     RANGE =  0.              FUEL  =   2057.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   133.93   -       CPU TIME USED IN PREVIOUS TASK =   1.1140

 RGSAVE
ITZ          WT             H            AM       TAC***        FUEL      RUN***        XNZZ   E10   E11 OPTION
 41   .8246E+06   3000.        .5000       .2222E-01   4931.       4.714       1.000       -0.    0.     1


UNPACK        51     51100          5         1        1         0        0.         1
  .40000      5001.0     0.             4.0000     0.               51100 0.                     1 0.          1111111111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.24.35.          PAGE   86

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                           LINEAR MACH ALTITUDE CLIMB PATH HISTORY
  TIME          RANGE         WEIGHT       FUEL          ALTITUDE      MACH NO.     V (KNOTS)   GAMTD         NET THRUST        SFC
     0.000    0.               824556.   0.                3000.          .500          327.          8.57   313076.3       .72210
      .020     .10919          824480.    75.94            3100.          .505          330.          8.54   312818.2       .72233
      .040     .21898          824404.   151.5             3200.          .510          333.          8.50   312566.2       .72257
      .060     .32930          824329.   226.8             3300.          .515          337.          8.45   312323.3       .72280
      .080     .44030          824254.   301.7             3400.          .520          340.          8.41   312089.5       .72303
      .100     .55199          824180.   376.2             3500.          .525          343.          8.36   311864.0       .72325
      .120     .66422          824105.   450.5             3600.          .530          346.          8.31   311649.2       .72347
      .139     .77707          824031.   524.5             3700.          .535          349.          8.27   311442.6       .72369
      .159     .89054          823958.   598.1             3800.          .540          352.          8.22   311245.8       .72390
      .179    1.0046           823884.   671.5             3900.          .545          355.          8.18   311037.4       .72412
      .198    1.1194           823811.   744.7             4000.          .550          359.          8.13   310829.1       .72434
      .217    1.2348           823738.   817.5             4100.          .555          362.          8.09   310641.2       .72455
      .237    1.3508           823666.   890.1             4200.          .560          365.          8.05   310462.3       .72475
      .256    1.4675           823593.   962.5             4300.          .565          368.          8.00   310292.5       .72495
      .275    1.5848           823521.  1035.              4400.          .570          371.          7.96   310131.7       .72515
      .295    1.7028           823449.  1107.              4500.          .575          374.          7.91   309979.8       .72534
      .314    1.8215           823378.  1178.              4600.          .580          377.          7.87   309836.9       .72553
      .333    1.9408           823306.  1250.              4700.          .585          380.          7.83   309702.9       .72571
      .352    2.0608           823235.  1321.              4800.          .590          384.          7.79   309577.7       .72589
      .371    2.1814           823164.  1392.              4900.          .595          387.          7.74   309461.3       .72606
      .390    2.3027           823093.  1463.              5000.          .600          390.          7.72   309353.7       .72623
 76. ****** XCLECT END     OPTION   1 ******
                          WT    =   .82309E+06     H     =   5000.0         AM    =   .60000

                          TIME  =   .10555         RANGE =   4.7136         FUEL  =   4931.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    105.07          CPU TIME USED IN PREVIOUS TASK =   1.1440

 RGSAVE
ITZ           WT              H            AM       TAC***          FUEL       RUN***          XNZZ   E10   E11 OPTION
 51   .8231E+06   5000.        .6000       .6495E-02   1463.        2.303        1.000        -0.    0.     1

UNPACK         61      51100          5          1          1          0          0.          1
  .00000       21500.      0.           4.0000      0.                  51100 0.                      1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77          10.24.30.          PAGE   81

                                      LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                      ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                      FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.    V (KNOTS)   GAMTD        NET THRUST       SFC

    0.000   0.                823093.   0.                5000.         .600         390.       13.01   309352.5        .72623

     .092    .58745           822751.    341.8            5825.         .610         395.       12.83   303659.2        .72530

     .186   1.1914            822412.   681.2             6650.         .620         400.       12.50   298106.4        .72430

     .280   1.8122            822075.   1018.             7475.         .630         406.       12.16   292656.5        .72335

     .376   2.4505            821740.   1353.             8300.         .640         411.       11.84   287265.9        .72235

     .473   3.1069            821407.   1687.             9125.         .650         416.       11.52   281902.1        .72131

     .572   3.7817            821075.   2018.             9950.         .660         421.       11.22   276721.3        .72028

     .672   4.4758            820746.   2347.            10775.         .670         426.       10.91   271639.2        .71918

     .774   5.1894            820418.   2675.            11600.         .680         431.       10.62   266592.7        .71808

     .877   5.9234            820092.   3001.            12425.         .690         436.       10.33   261649.8        .71694

     .982   6.6785            819767.   3326.            13250.         .700         441.       10.04   256653.3        .71605

    1.089   7.4559            819444.   3649.            14075.         .710         446.        9.76   251671.5        .71529

    1.197   8.2567            819121.   3972.            14900.         .720         451.        9.48   246818.4        .71447

    1.308   9.0814            818799.   4294.            15725.         .730         456.        9.21   242081.3        .71364

    1.421   9.9311            818478.   4615.            16550.         .740         461.        8.94   237204.6        .71270

    1.536   10.807            818158.   4935.            17375.         .750         465.        8.68   232683.0        .71192

    1.653   11.709            817838.   5255.            18200.         .760         470.        8.42   227999.4        .71104

    1.772   12.640            817519.   5574.            19025.         .770         475.        8.17   223465.6        .71013

    1.894   13.601            817199.   5894.            19850.         .780         479.        7.92   219040.3        .70917

    2.019   14.591            816880.   6213.            20675.         .790         484.        7.68   214706.3        .70817

    2.146   15.614            816561.   6532.            21500.         .800         488.        7.56   210322.5        .70717
 77. ****** XCLECT END    OPTION   1 ******
                      WT     =   .81656E+06      H      =   21500.          AM     =   .80000

                      TIME   =   .11204         RANGE =   7.8163         FUEL   =   1462.8

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   186.24          CPU TIME USED IN PREVIOUS TASK =   1.1700

 RGSAVE
ITZ           WT              H              AM       TAC***          FUEL        RUN***         XNZZ   E10   E11 OPTION
 61   .8166E+06    .2150E+05    .8000        .3577E-01    6532.        15.61        1.000        -0.    0.     1


UNPACK         71     51100          5          1         1          0         0.         1
  .95000       29000.      0.              4.0000      0.                   51100 0.                        1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                        01/14/77          10.24.40.          PAGE   02

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                          LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT      FUEL         ALTITUDE     MACH NO.   V (KNOTS)   GAMFD        NET THRUST        SFC

    0.000   0.                816561.   0.             21500.        .800        488.        7.18   218318.7      .70719
     .061    .49514           816373.    187.9         21875.        .807        492.        7.16   231786.8      .04772
     .121    .90228           816179.    382.4         22250.        .815        496.        7.13   236226.8      .04509
     .181   1.4021            815983.    578.5         22625.        .822        500.        6.94   228640.5      .04406
     .243   1.9953            815784.    776.5         23000.        .830        503.        6.76   227108.8      .04219
     .306   2.5225            815584.    976.6         23375.        .837        507.        6.58   225588.5      .04020
     .371   3.0643            815382.   1179.          23750.        .845        511.        6.40   224024.8      .03841
     .436   3.6218            815178.   1383.          24125.        .852        515.        6.22   222467.2      .03655
     .503   4.1955            814971.   1590.          24500.        .860        518.        6.05   226937.7      .03465
     .572   4.7864            814761.   1800.          24875.        .867        522.        5.87   219441.4      .03271
     .642   5.3954            814549.   2012.          25250.        .875        526.        5.70   217936.9      .03081
     .714   6.0233            814333.   2228.          25625.        .882        529.        5.52   216457.4      .02887
     .787   6.6712            814115.   2446.          26000.        .890        533.        5.35   215085.4      .02691
     .862   7.3401            813892.   2669.          26375.        .897        537.        5.17   213561.5      .02492
     .940   8.0361            813665.   2896.          26750.        .905        540.        4.92   212073.1      .02296
    1.022   8.7742            813428.   3133.          27125.        .912        544.        4.63   210613.6      .02095
    1.109   9.5612            813179.   3382.          27500.        .920        548.        4.33   209181.1      .01892
    1.201  10.404             812917.   3644.          27875.        .927        551.        4.04   207749.7      .01689
    1.300  11.309             812639.   3922.          28250.        .935        555.        3.75   206313.9      .01489
    1.405  12.288             812344.   4217.          28625.        .942        558.        3.46   204904.5      .01285
    1.520  13.352             812029.   4532.          29000.        .950        562.        3.32   203521.6      .01079
 70. ****** KCLECT END     OPTION   1 ******
                           WT     =    .81203E+06      H     =    29000.         AM     =   .95000

                           TIME   =    .14781         RANGE =    22.630         FUEL   =   6532.1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    107.43           CPU TIME USED IN PREVIOUS TASK =    1.1860

 RGSAVE
ITZ          WT            H           AM        TAC***          FUEL       RUN***         XNZZ    E10    E11 OPTION
 71    .8120E+06    .2900E+05    .9500         .2533E-01    4532.         13.35        1.000       -0.     0.      1

UNPACK         71      51100           5           1          1          0          0.          1
  1.5060       40500.      0.             4.0000      0.                  51100 0.                      1 0.          1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                       01/14/77           10.24.44.          PAGE   03

                                     LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                     ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                     FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                       LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME         RANGE        WEIGHT      FUEL         ALTITUDE    MACH NO.    V (KNOTS)   GAMTD        NET THRUST      SFC

    0.000   0.               812029.   0.            29000.        .950         562.        1.87   203521.2       .81879

     .306    2.9813          811183.    846.4        29575.        .977         577.        1.70   205077.0       .81125

     .667    6.4132          810172.   1857.         30150.       1.005         592.        1.44   207667.2       .81429

    1.073   10.466           809020.   3009.         30725.       1.032         606.        1.27   206470.5       .82996

    1.511   14.949           807760.   4269.         31300.       1.060         621.        1.15   205549.3       .84407

    1.985   19.905           806382.   5647.         31875.       1.087         635.        1.13   204096.3       .85766

    2.422   24.505           805091.   6938.         32450.       1.115         650.        1.16   200721.2       .85409

    2.845   29.216           803824.   8205.         33025.       1.142         664.        1.19   204910.3       .88212

    3.246   33.700           802608.   9421.         33600.       1.170         678.        1.25   202407.2       .90457

    3.616   37.919           801473.   .1056E+05     34175.       1.197         692.        1.30   200793.7       .92427

    3.960   42.023           800376.   .1165E+05     34750.       1.225         706.        1.31   199741.2       .94155

    4.321   46.222           799262.   .1277E+05     35325.       1.252         720.        1.28   199095.3       .95697

    4.672   50.473           798141.   .1389E+05     35900.       1.280         734.        1.24   198940.1       .97037

    5.030   54.997           796954.   .1508E+05     36475.       1.307         749.        1.34   199360.5       .98486

    5.320   58.657           795995.   .1603E+05     37050.       1.335         765.        1.63   220117.1       .90907

    5.564   61.696           795200.   .1683E+05     37625.       1.362         781.        1.66   227062.2       .89095

    5.770   64.503           794467.   .1756E+05     38200.       1.390         797.        1.99   232999.3       .89272

    5.974   67.130           793779.   .1825E+05     38775.       1.417         813.        2.11   230405.3       .88899

    6.150   69.650           793124.   .1891E+05     39350.       1.445         828.        2.20   243466.9       .88601

    6.331   72.050           792496.   .1953E+05     39925.       1.472         844.        2.30   240494.6       .88374

    6.494   74.369           791895.   .2013E+05     40500.       1.500         860.        2.34   253539.2       .88154
 79. ****** XCLECT END    OPTION   1 ******
                   WT    =   .79189E+06      H     =   40500.         AM    =   1.5000

                   TIME  =   .17314          RANGE =   35.902         FUEL  =   4532.0

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   109.10          CPU TIME USED IN PREVIOUS TASK =   1.6760

 AGSAVE
ITZ          WT            H            AM        TAC***         FUEL       RUN***          XNZZ    E10    E11 OPTION
 01   .7919E+06    .4050E+05    1.500          .1082         .2013E+05    74.37          1.000      -0.     0.      1


UNPACK         91     51100          5          1        1         0        0.         1
  2.0000       52971.     0.              4.0000       0.                51100 0.                      1 0.           1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                 01/14/77          10.24.40.          PAGE   84

                                         LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                         ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                         FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                              LINEAR MACH ALTITUDE CLIMB PATH HISTORY

  TIME       RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAMPD       NET THRUST      SFC

   0.000   0.              791895.   0.             40500.        1.500         860.        1.60   253560.3       .08141
    .252    3.6601         790931.    964.2         41124.        1.555         891.        1.60   269804.0       .07730
    .472    6.9970         790037.   1858.          41747.        1.610         923.        1.84   286546.9       .07263
    .667   10.051          789202.   2693.          42371.        1.665         954.        2.00   303156.9       .06904
    .842   12.874          788414.   3481.          42994.        1.720         986.        2.16   320004.3       .06712
   1.000   15.580          787668.   4227.          43618.        1.775        1017.        2.32   337390.1       .06390
   1.142   17.953          786959.   4936.          44241.        1.830        1049.        2.47   354949.3       .06103
   1.272   20.257          786281.   5613.          44865.        1.885        1080.        2.63   372727.3       .05834
   1.391   22.420          785633.   6262.          45488.        1.940        1112.        2.78   390029.9       .05503
   1.501   24.486          785089.   6806.          46112.        1.995        1144.        2.87   407306.0       .05293
   1.606   26.524          784392.   7503.          46735.        2.050        1175.        2.87   418208.1       .05024
   1.710   28.504          783765.   8129.          47359.        2.105        1207.        2.84   433697.9       .04879
   1.812   30.663          783130.   8765.          47983.        2.160        1238.        2.81   447607.3       .04743
   1.913   32.763          782484.   9411.          48606.        2.215        1270.        2.77   462104.2       .04534
   2.013   34.980          781826.   .1007E+05      49230.        2.270        1301.        2.67   469502.7       .04262
   2.116   37.162          781147.   .1075E+05      49853.        2.325        1333.        2.53   473190.2       .04092
   2.222   39.546          780441.   .1145E+05      50477.        2.380        1364.        2.40   476777.1       .03902
   2.332   42.060          779700.   .1219E+05      51100.        2.435        1396.        2.28   480706.3       .03655
   2.444   44.696          778950.   .1294E+05      51724.        2.490        1427.        2.24   491529.7       .03524
   2.552   47.312          778201.   .1369E+05      52347.        2.545        1459.        2.33   502217.9       .03386
   2.652   49.752          777499.   .1440E+05      52971.        2.600        1490.        2.40   512500.6       .03158
 80. ****** XCLECT END     OPTION   1 ******
                    WT    =   .77750E+06     H     =   52971.        AM    =   2.6000

                    TIME  =   .20137         RANGE =   110.35        FUEL  =   20134.
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   111.10          CPU TIME USED IN PREVIOUS TASK =   2.0760

 RGSAVE
ITZ          WT            H           AM        TAC***         FUEL       RUN***          XNZZ   E10   E11 OPTION
 91   .7779E+06   .5297E+05   2.600          .4420E-01   .1440E+05   49.75        1.000        -0.    0.     1


UNPACK        101      51100          5           1          1          0          0.          1
  5.9500      07990.      0.             5.0000      0.                 51100 0.                      1 0.          1111111111
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                              LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                              ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                              FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                               CONSTANT DYNAMIC PRESSURE CLIMB PATH HISTORY
  TIME        RANGE       WEIGHT      FUEL        ALTITUDE    MACH NO.    V (KNOTS)   GAMPD       NET THRUST     SFC
    0.000   0.            777499.   0.             52971.       2.600        1490.       3.83   512490.5      .83149
     .171   4.3873        776287.    1211.         54722.       2.695        1545.       3.63   512777.3      .82940
     .353   9.0966        774998.    2500.         56473.       2.811        1611.       3.30   505169.3      .82700
     .534   14.059        773757.    3742.         58224.       2.932        1681.       3.10   485296.5      .83157
     .724   19.403        772501.    4998.         59975.       3.050        1753.       2.73   423368.5      .81990
     .952   26.275        771058.    6440.         61726.       3.190        1828.       2.38   409098.0      .81691
    1.197   33.884        769545.    7954.         63477.       3.327        1907.       2.05   396580.1      .81517
    1.460   42.428        767978.    9520.         65228.       3.470        1989.       1.80   383270.0      .81540
    1.751   52.270        766306.   .1119E+05      66979.       3.619        2076.       1.57   369203.3      .81793
    2.069   63.531        764539.   .1296E+05      68730.       3.774        2160.       1.38   355460.6      .82109
    2.414   76.207        762602.   .1490E+05      70480.       3.935        2263.       1.22   342909.1      .82479
    2.788   90.684        760736.   .1676E+05      72231.       4.103        2363.       1.08   331997.9      .82865
    3.198   106.07        758695.   .1880E+05      73982.       4.270        2467.        .96   321616.0      .83597
    3.625   125.12        756546.   .2096E+05      75733.       4.460        2574.        .85   311891.0      .84679
    4.090   149.86        754247.   .2329E+05      77484.       4.649        2687.        .74   298483.5      .86100
    4.628   169.76        751784.   .2572E+05      79235.       4.845        2804.        .66   285534.9      .87740
    5.208   197.43        749123.   .2838E+05      80986.       5.049        2925.        .56   272828.9      .89679
    5.844   229.52        746241.   .3126E+05      82737.       5.262        3052.        .48   261119.1     1.0190
    6.559   266.69        743128.   .3438E+05      84488.       5.482        3184.        .41   250284.5     1.0339
    7.357   309.94        739722.   .3778E+05      86239.       5.712        3321.        .35   239105.0     1.0592
    8.294   368.71        735990.   .4151E+05      87990.       5.950        3464.        .32   228596.0     1.0703
 81. ****** XCLECT END    OPTION   1 ******
                   WT    =   .73599E+06      H     =   87990.          AM    =   5.9500

                   TIME  =   .32550          RANGE =   168.10          FUEL  =   14396.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   112.64          CPU TIME USED IN PREVIOUS TASK =   1.4600

 RGSAVE
ITZ         WT            H           AM       TAC***         FUEL       RUN***          XNZZ    E10   E11 OPTION
101   .7360E+06    .8799E+05    5.950       .1376       .4151E+05    368.7        1.000      -0.    0.     1

UNPACK        111      51100          5          1         1          0          0.          1
  5.9900       99120.     0.            4.0000      0.                51100 0.                     1 0.          1111111111
  NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                   01/14/77          10.24.54.         PAGE   86

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                            LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME         RANGE        WEIGHT     FUEL         ALTITUDE     MACH NO.    V (KNOTS)  GAMTD        NET THRUST      SFC

   0.000   0.              735990.   0.              87990.        5.950       3464.          3.31   226453.0       1.0783

     .027    1.5843         735878.    111.6          88546.        5.952       3466.          3.26   223400.0       1.0778

     .056    3.2160         735766.    224.5          89103.        5.954       3469.          3.16   219559.5       1.0774

     .085    4.9000         735651.    338.7          89659.        5.956       3471.          3.06   215739.1       1.0769

     .115    6.6364         735536.    454.4          90216.        5.958       3474.          2.97   212023.0       1.0765

     .146    8.4292         735418.    571.6          90772.        5.960       3476.          2.88   208411.3       1.0761

     .178    10.281         735299.    690.6          91329.        5.962       3479.          2.78   204897.9       1.0757

     .211    12.197         735179.    811.3          91885.        5.964       3481.          2.69   201481.9       1.0753

     .245    14.179         735056.    934.1          92442.        5.966       3484.          2.60   198168.5       1.0749

     .281    16.232         734931.    1059.          92998.        5.968       3486.          2.51   194931.2       1.0745

     .317    18.361         734804.    1186.          93555.        5.970       3489.          2.42   191791.4       1.0741

     .355    20.571         734674.    1316.          94111.        5.972       3491.          2.33   188738.9       1.0737

     .395    22.869         734541.    1449.          94668.        5.974       3494.          2.24   185771.2       1.0733

     .436    25.260         734405.    1585.          95224.        5.976       3496.          2.15   182886.1       1.0730

     .479    27.754         734266.    1725.          95781.        5.978       3499.          2.06   180081.2       1.0726

     .523    30.357         734122.    1868.          96337.        5.980       3501.          1.97   177354.5       1.0723

     .570    33.080         733975.    2015.          96894.        5.982       3503.          1.88   174703.6       1.0719

     .619    35.935         733823.    2167.          97450.        5.984       3506.          1.79   172126.6       1.0716

     .670    38.935         733666.    2324.          98007.        5.986       3508.          1.70   169621.2       1.0713

     .724    42.094         733503.    2487.          98563.        5.988       3511.          1.62   167185.3       1.0709

     .781    45.432         733333.    2657.          99120.        5.990       3513.          1.53   164817.0       1.0706
 82. ****** XCLECT END     OPTION   1 ******
                      WT     =   .73333E+06     H     =    99120.         AM    =   5.9900

                      TIME   =   .46315        RANGE =   520.92         FUEL  =   41509.

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    114.38          CPU TIME USED IN PREVIOUS TASK =   1.7400

 RGSAVE
ITZ          WT            H           AM       TAC***         FUEL       RUN***         XNZZ    E10    E11 OPTION
111   .7333E+06    .9912E+05   5.990       .1302E-01    2657.        45.43        1.000        -6.     0.     1


UNPACK        121      51100          5         1         1          0         0.         21
  5.0000       .40000       6.0000     0.          -99120.           51100 0.                    21 0.          1111111111
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            RAMJET PERFORMANCE (PER ENGINE) AT SCALING ALTITUDE AND MACH NUMBER

RAMJET GROSS THRUST - - - - - - - - - - - -     41492.6       (LB)
NET THRUST IN FREESTREAM DIRECTION  - - -      41336.1       (LB)
AIRFLOW RATE  - - - - - - - - - - - - - -      420.221       (LB/SEC)
FUELFLOW RATE - - - - - - - - - - - - - -      12.2789       (LB/SEC)
SPECIFIC IMPULSE  - - - - - - - - - - - -      3381.91       (SEC)
SCALED FUEL/AIR RATIO (PHI) - - - - - - -        1.000       (NO UNITS)
SCALING ALTITUDE  - - - - - - - - - - - -      99120.0       (FEET)
SCALING MACH NUMBER - - - - - - - - - - -        6.003       (NO UNITS)
MAXIMUM AIRFLOW RATE  - - - - - - - - - -      421.727       (LB/SEC)
ANGLE OF ATTACK - - - - - - - - - - - - -      5.42436       (DEGREES)
WING HALF ANGLE- - - - - - - - - - - - - - - -.700000       (DEGREES)
INLET WEDGE ANGLE- - - - - - - - - - - - -     6.00000       (DEGREES)
SCALING THRUST IN FREESTREAM DIRECTION - -     41336.1       (LB)
LIFT COMPONENT OF ENGINE FORCES - - - - -      3473.05       (LB)
INLET SPILLAGE DRAG - - - - - - - - - - -      .4042320E-10  (LB)
ENGINE INLET AREA - - - - - - - - - - - -       40.767       (SQ. FT)
RAMJET THROTTLE SETTING - - - - - - - - -         .996       (NO UNITS)
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        NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                01/14/77           10.25.09.          PAGE   87

                                                LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                        CLIMB PATH HISTORY

  TIME        RANGE       WEIGHT      FUEL        ALTITUDE    MACH NO.   V (KNOTS)   GAMTD       NET THRUST      SFC

    0.000   0.             530000.   0.            99120.       5.092       2987.        0.11  -11314.70      -.11934

     .370    18.191        529993.    6.799       114079.       4.705       2836.        3.74  -11701.10      -.71330E-01

     .713    33.011        529988.    11.92       113029.       4.637       2746.        -.86  -12475.63      -.67050E-01

    1.064    49.576        529984.    16.40       112604.       4.485       2694.        -.71  -12132.19      -.60447E-01

    1.432    65.506        529979.    21.40       111431.       4.320       2599.       -2.23  -11957.62      -.70094E-01

    1.819    81.042        529973.    27.10       104999.       4.219       2484.       -3.58  -11656.66      -.85990E-01

    2.273    100.33        529965.    34.07        98567.       4.105       2487.       -3.16  -10270.07      -.10705

    2.777    120.21        529955.    44.93        92134.       3.986       2327.       -3.03  -9070.092      -.13295

    3.304    140.26        529942.    57.61        85702.       3.862       2245.       -3.11  -9062.376      -.16151

    3.828    159.28        529927.    72.98        79270.       3.738       2159.        1.76  -10107.20      -.19302

    4.446    180.40        529912.    87.82        94492.       3.331       1947.        1.53  -8374.405      -.11999

    5.125    202.08        529899.    100.9        86147.       3.190       1868.       -3.66  -9225.395      -.14172

    5.832    223.37        529881.    118.7        77883.       3.057       1767.        -.24  -9594.547      -.10070

    6.532    242.09        529859.    141.2        84411.       2.695       1565.        2.14  -7454.057      -.21536

    7.288    261.47        529843.    156.7        86570.       2.396       1378.         .13  -7120.527      -.13900

    8.305    283.10        529829.    170.5        84698.       2.036       1182.       -3.13  -8233.005      -.82959E-01

    9.536    306.24        529812.    187.6        71264.       1.885       1085.       -4.17  -10570.17      -.93639E-01

   10.927    329.29        529790.    209.6        64142.       1.575        903.       -3.91  -13415.25      -.66002E-01

   12.398    349.28        529769.    231.3        53737.       1.265        725.       -4.15  -27302.09      -.32530E-01

   14.055    372.75        529740.    260.2        45245.        .778        441.       -4.33   712.0767       .00106

   20.392    409.97        529657.    343.1        24470.        .621        375.       -3.35   1570.306       .03111

   24.436    439.10        526841.    3159.        20000.        .800        491.       -1.44   61792.04       .76934
 06. ****** XCLECT END     OPTION   1 ******
                        WT     =   .52684E+06      H      =   20000.         AM     =   .80000

                        TIME   =   2.3255          RANGE =    6557.0         FUEL   =   .20333E+06

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   121.69          CPU TIME USED IN PREVIOUS TASK =   6.9560

 MGSAVE
ITZ           WT             H              AM       TAC***        FUEL       RUN***         XNZZ    E10    E11 OPTION
151   .5268E+06   .2000E+05   .8000        .4073        3159.       439.2        1.000       -0.     0.      1


UNPACK        161      51010          5         1         0         10        10.        17
 0.           0.          0.          5.0000      1.0000          51010  2.0000            17 0.           1111111111
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NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                          01/14/77            10.25.11.           PAGE   48

                                            LRC TEST PROBLEM NUMBER 3  ------  NSEG III
                                            ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                            FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                                                LINEAR MACH ALTITUDE CLIMB PATH HISTORY

 TIME        RANGE        WEIGHT      FUEL        ALTITUDE     MACH NO.    V (KNOTS)   GAMTD       NET THRUST        SFC

   0.000   0.             522881.   0.              20000.        .866         491.       19.06   221295.2          .71091
    .077    .59493        522684.    197.2          21250.        .880         489.       18.60   212221.0          .70724
    .150   1.2222         522485.    395.8          22500.        .880         486.       17.49   203170.6          .70561
    .244   1.8858         522285.    596.3          23750.        .880         484.       16.78   194422.8          .70397
    .335   2.5065         522082.    798.8          25000.        .880         481.       15.90   185878.6          .70240
    .432   3.3299         521877.   1004.           26250.        .880         479.       15.03   177695.8          .70077
    .534   4.1192         521670.   1211.           27500.        .880         476.       14.19   169691.5          .69924
    .643   4.9998         521459.   1422.           28750.        .880         474.       13.30   161963.0          .69737
    .761   5.8618         521245.   1637.           30000.        .880         471.       12.36   153280.4          .69286
    .888   6.8391         521026.   1855.           31250.        .880         469.       11.43   144821.1          .68669
   1.028   7.9378         520803.   2078.           32500.        .880         466.       10.47   136823.4          .68126
   1.188   9.0676         520573.   2308.           33750.        .880         463.        9.59   129224.7          .67503
   1.360  10.342          520337.   2545.           35000.        .880         461.        8.66   122376.1          .67175
   1.537  11.777          520095.   2786.           36250.        .880         459.        7.51   115755.5          .66088
   1.762  13.406          519814.   3070.           37500.        .880         459.        6.40   109013.4          .66089
   2.016  15.418          519505.   3376.           38750.        .880         459.        5.73   102663.2          .66028
   2.304  17.601          519186.   3695.           40000.        .880         459.        5.00    96681.38         .66031
   2.636  20.133          518839.   4042.           41250.        .880         459.        4.29    91046.51         .66045
   3.027  23.116          518454.   4427.           42500.        .880         459.        3.61    85738.25         .66060
   3.508  26.727          518015.   4866.           43750.        .880         459.        2.92    80737.51         .66078
   4.097  31.279          517495.   5386.           45000.        .880         459.        2.59    76026.28         .66090
 00. ****** XCLECT END    OPTION   1 ******
                 WT    =   .51749E+06      H     =   45000.        AM    =   .88000

                 TIME  =   2.8161          RANGE =   6997.0        FUEL  =   3959.3

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   122.88           CPU TIME USED IN PREVIOUS TASK =   1.1500

 RGSAVE
ITZ          WT            H           AM        TAC***        FUEL       RUN***          XNZZ   E10   E11 OPTION
171   .5175E+06   .4500E+05   .8800          .6020E-01   5386.         31.20        1.000          -0.    0.     1


UNPACK        101     51010         5          1         9         10        10.          7          .
 0.           0.          0.            1.0000       288.30          51010 0.                      7 0.            1111111111
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   HSEG II --- AIRCRAFT PERFORMANCE PROGRAM                         01/14/77            10.25.21.          PAGE   89

                                             LRC TEST PROBLEM NUMBER 3  -----  HSEG III
                                             ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                             FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                                   CLIMB PATH HISTORY

  TIME        RANGE        WEIGHT       FUEL         ALTITUDE     MACH NO.     V (KNOTS)    GAMTO        NET THRUST       SFC

    0.000   0.              502577.    0.             45000.        .800           459.       -1.98   735.5932        .80121

     .245   1.8323          502575.     2.482         44631.        .764           438.       -3.51   729.2391        .79838

     .497   3.6530          502572.     4.893         43638.        .756           433.       -5.09   759.0399        .79763

     .755   5.4970          502571.     7.347         42646.        .747           428.      -10.09   798.4141        .79660

    1.015   7.3040          502567.    11.60          39546.        .831           476.       -9.88   988.0437        .81150

    1.250   9.2935          502563.    13.93          38604.        .821           470.       -4.50   1030.?13        .80843

    1.510  11.254           502560.    17.40          37662.        .811           465.       -4.46   1065.495        .80433

    1.773  13.271           502556.    21.20          36719.        .800           459.       -4.35   1101.411        .80013

    2.045  15.332           502552.    25.35          35777.        .789           453.       -4.31   1138.607        .80064

    2.320  17.380           502548.    29.60          34835.        .775           447.       -4.31   1172.742        .80316

    2.599  19.447           502543.    34.05          33893.        .761           441.       -4.30   1206.904        .80573

    2.883  21.510           502539.    38.72          32950.        .749           435.       -4.29   1242.258        .80824

    3.171  23.577           502534.    43.62          32008.        .734           428.       -4.28   1278.543        .81070

    3.464  25.647           502528.    48.76          31066.        .720           422.       -4.28   1315.79"        .81337

    3.762  27.721           502523.    54.17          30124.        .706           416.       -4.27   1355.676        .81647

    4.065  29.799           502517.    59.86          29182.        .692           409.       -4.26   1396.508        .81954

    4.374  31.881           502511.    65.85          28239.        .678           402.       -4.25   1438.112        .82290

    4.689  33.968           502505.    72.15          27297.        .664           396.       -4.24   1480.934        .82595

    5.009  36.058           502498.    78.81          26355.        .650           389.       -4.23   1525.249        .82863

    5.337  38.153           502491.    85.80          25413.        .636           382.       -4.23   1570.170        .83129

    5.671  40.253           502484.    93.19          24470.        .621           375.       -2.03   1616.374        .83400

    9.714  69.559           499715.    2873.          20000.        .800           491.       -1.44   60326.96        .70865

90. ****** SELECT END     OPTION    1 ******
                       WT    =   .49970E+06     H     =   20000.          AM    =   .80000

                       TIME  =   3.3206         RANGE =   7220.3          FUEL  =   14910.

*** *** *** *** *** *** *** 5** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   127.91            CPU TIME USED IN PREVIOUS TASK =   4.7360

 RGSAVE
ITZ          WT              H             AM        TAC***          FUEL       RUN***          XNZZ    E10    E11 OPTION
191    .4997E+06    .20000E+05    .8000        .1619         2873.         69.56         1.000          -0.     0.       1

UNPACK          201       51010           5          1          0          10         10.          17
 0.             0.            0.              5.0000      1.0000            51013  2.0000                 17 0.            1111111111
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                                         LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                         ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                         FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

SEARCH FOR MACH ALTITUDE POINT ALONG A CONSTANT ENERGY   LINE

 THE BASIS FOR SELECTION OF EACH MACH ALTITUDE POINT WAS MAXIMUM LIFT/DRAG

                                                            CLIMB PATH HISTORY

  TIME        RANGE       WEIGHT      FUEL        ALTITUDE    MACH NO.    V (KNOTS)   GAMPD       NET THRUST      SFC

    0.000   0.            495794.   0.            20000.       .600        491.        13.83  2149.716       .04009

     .309   2.1913        495775.    6.433        23298.       .603        365.         4.92  1710.297       .04049

     .755   4.8606        495765.   19.07         22109.       .585        356.        -4.19  1739.287       .04069

    1.213   7.5376        495753.   30.44         20898.       .566        346.        -4.18  1795.547       .04142

    1.687   10.222        495741.   42.56         19708.       .547        336.        -4.17  1853.176       .04207

    2.176   12.913        495729.   55.49         18517.       .528        326.        -4.16  1913.537       .04250

    2.682   15.611        495715.   69.32         17326.       .509        315.        -4.15  1975.411       .04293

    3.207   18.312        495701.   84.12         16136.       .489        304.        -4.15  2039.267       .04382

    3.752   21.613        495686.   99.98         14945.       .467        293.        -5.96  2104.766       .04389

    4.292   23.714        495662   115.6          12935.       .494        312.        -5.43  2272.673       .04764

    4.820   26.425        495656.  134.1          11915.       .471        299.        -4.83  2336.380       .04709

    5.392   29.160        495631.  152.9          10598.       .452        288.        -4.36  2411.011       .04722

    5.971   31.910        495611.  173.1           9275.       .429        281.        -4.60  2561.982       .04788

    6.566   34.668        495589.  194.5           7914.       .429        275.        -4.61  2599.763       .04865

    7.175   37.410        495567.  217.4           6573.       .417        269.        -4.60  2690.277       .04920

    7.800   40.184        495542.  241.7           5209.       .406        264.        -4.63  2802.371       .04991

    8.441   42.959        495516.  267.6           3947.       .396        258.        -4.61  2927.010       .05099

    9.098   45.743        495489.  295.2           2485.       .365        252.        -4.62  3013.322       .05264

    9.771   48.537        495459.  324.6           1125.       .375        247.        -4.10  3125.864       .05436

   10.408   51.329        495427.  356.5             51.       .362        226.        -1.70  3190.471       .05234

   10.711   51.716        495417.  366.6             50.       .205        132.         0.00  1616.376       .03400
 92. ****** XCLECT END     OPTION   1 ******
                 WT     =   .49542E+06     H      =   50.000         AM     =   .20000

                 TIME   =   3.5658         RANGE =   7297.0          FUEL   =   3520.7

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =    132.01          CPU TIME USED IN PREVIOUS TASK =    4.0560

 RSSAVE
IT2          WT              H          AM        TAC***         FUEL       RUN***         XNZZ    E1C    E11 OPTION
711   .4954E+06   50.00        .2000        .1924        366.6        52.10        1.000         -0.     0.     1

UNPACK       221      51210          5          1          2          10         10.         22
  1.0000       2.0000       7350.0       4.0000       20.000            51210 0.                       22  2.0000       1111111111
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   NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                                    01/14/77            10.25.32.          PAGE   91

                                                  LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                  ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.

                         INPUT TO LANDING CALCULATIONS
WING REFERENCE AREA  (SF)                          SREF   =    14724.00
FLAT PLATE AREA OF GEAR (SF)                       SPLG   =    200.0000
FLAT PLATE DRAG COEFF OF GEAR                      CDPLG  =    .5000000
GROUND ROLL BODY ANGLE (DEG)                       AG     =    .2500000
MAXIMUM GROUND ROTATION ANGLE (DEG)                AMAXG  =    20.00000
WING INCIDENCE (DEG)                               WINCID=  -.7000000
THEORETICAL WING ASPECT RATIO                      ARTHEO=    2.000000
WING LEADING EDGE SWEEP ANGLE (DEG)                WSLEPC=    60.00000
TOTAL LIFT LIFT CURVE SLOPE (PER DEG)              CLATOT=    .5115000E-01
LIFT COEF AT ZERO ANGLE OF ATTACK                  CLO    =  0.
WING TAPER RATIO                                   TRATIO=    .2000000
INDUCED DRAG FACTOR                                DFK    =    .1090000
GROUND ROLL FRICTION COEFFICIENT                   GRNDFL=    .2500000
DRAG COEFF AT ZERO LIFT                            CDO    =    .8600000E-02
WEIGHT AT START OF LANDING  (LB)                   WL     =    495417.4
MAXIMUM GROUND ROLL (FT)  IGNORED, IF ZERO         XMAXG  =    7500.000
FLAP SPAN TO EXPOSED WING SPAN RATIO               BFOBEX=    .4650000
FLAPDEFLECTION (DEG)                               FLAPDL=    45.00000
AVERAGE FLAP CHORD TO WING CHORD RATIO             CFOCAV=    .1500000
FLAT PLATE AREA OF DRAG CHUTE (SF)                 SPCHUT=  0.
FLAT PLATE DRAG COEFF OF CHUTE                     CDPCHT=  0.
LANDING  THRUST (LB)                               FNL    =  0.

                         OUTPUT FROM LANDING CALCULATIONS

MAXIMUM WING LIFT COEFFICIENT                      CLMAX  =    1.104921
MAXIMUM WING PLUS FLAP LIFT COEFFICIENT            CLMAXF=    1.415533
FLAP LIFT COEFFICIENT INCREMENT                    DELCLF=    .3110110
TOUCHDOWN WING PLUS FLAT LIFT COEFFICIENT          CLTOF  =    .0582103
TOUCHDOWN BODY ANGLE (DEG)                         ATD    =    1.199238
TOUCHDOWN WING LIFT COEFFICIENT                    CLTD   =    10.05292
TOUCHDOWN SPEED (KNOTS)                            VTD    =    92.05343
SPEED AT OBSTACLE (KNOTS)                          V50    =    101.2500
LIFT COEFFICIENT AT OBSTACLE                       CL50   =    .9657041
DRAG COEFFICIENT AT OBSTACLE                       CD50   =    .1349093
DRAG COEFFICIENT AT TOUCHDOWN                      CDTD   =    .2050446
DRAG COEFFICIENT OF LANDING GEAR                   CDLG   =    .6791633E-02
DRAG COEFFICIENT DURING GROUND ROLL                CDG    =    .1549129E-01
AIR DISTANCE (FT)                                  XAIR   =    862.9959
RATE OF SINK  AT OBSTACLE (FPS)                    ROS    =    23.98459
FLIGHT PATH ANGLE AT OBSTACLE (DEG)                GAM50  =    8.029836
GROUND ROLL DISTANCE (FT)                          XG     =    1044.507
POWER OFF STALL SPEED (KNOTS)                      VSTAL  =    83.66234
GROUND ROLL LIFT COEFIICIENT                       CLG    =  -.2296236E-01
DRAG COEFFICIENT OF THE CHUTE                      CDCHUT=  0.

 96. ****** XCLECT END    OPTION  17 ******
                          WT    =   .49542E+06     H     =   50.000          AM    =   .20000

                          TIME  =   3.7482         RANGE =   7349.9          FUEL  =   306.56

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***



 CUMULATIVE CPU TIME =   132.91          CPU TIME USED IN PREVIOUS TASK =   .70000E-01

 RGSAVE
ITT          WT            H           AM       TAC***        FUEL        RUN***         XNZZ    E10   E11 OPTION
231   .49540E+06   50.00       .2000      0.            0.           0.            1.000      -0.    0.    17
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                                                  LAC TEST PROBLEM NUMBER 3  -----  NSEG III
                                                  ITERATE TO FIND INITIAL WEIGHT TO PRODUCE 7350 NM TOTAL RANGE
                                                  FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


DUMPAG

SEG        WT            H           AM        TIME         FUEL        RANGE          XNZZ       E10    E11 OPTION
  1   .8152E+06   0.            .2000      0.           0.          0.             1.000        0.     0.      8
  2   .8150E+06   0.            .2000      0.           0.          0.             1.000       -0.     0.     21
  3   .8134E+06   50.00         .2044       .8333E-01   1619.       0.             1.000       -0.     0.     17
  4   .8295E+06   50.00         .2044      0.           0.          0.             1.000       -0.     0.     13
  5   .8244E+06   3000.         .5000       .2221E-01   4931.        4.714         1.000       -0.     0.      1
  6   .8231E+06   5000.         .6000       .6495E-02   1463.        2.383         1.000       -0.     0.      1
  7   .8166E+06   .2150E+05     .8000       .3577E-01   6532.        15.61         1.000       -0.     0.      1
  8   .8120E+06   .2900E+05     .9500       .2533E-01   4522.        13.35         1.000       -0.     0.      1
  9   .7919E+06   .4050E+05    1.500        .1002       .2013E+05    74.37         1.000       -0.     0.      1
 10   .7775E+06   .5297E+05    2.600        .4428E-01   .1440E+05    49.75         1.000       -0.     0.      1
 11   .7360E+06   .8799E+05    5.950        .1376       .4151E+05    368.7         1.000       -0.     0.      1
 12   .7333E+06   .9912E+05    5.990        .1382E-01   2657.        45.43         1.000       -0.     0.      1
 13   .7333E+06   .9912E+05    5.990      0.            2657.       0.             1.000       -0.     0.     21
 14   .7333E+06   .9912E+05    5.990      0.            2657.       0.             1.000       -0.     0.     22
 15   .5380E+06   .9912E+05    5.092       1.049        .2833E+06    5992.         1.000       -0.     0.      6
 16   .5268E+06   .2000E+05     .8000       .4873       3159.        429.2         1.000       -0.     0.      1
 17   .5229E+06   .2000E+05     .8000       .8333E-01   3959.       0.             1.000       -0.     0.     17
 18   .5175E+06   .4500E+05     .8000       .6020E-01   5301.        31.20         1.000       -0.     0.      1
 19   .5026E+06   .4500E+05     .8000       .4362       .1492E+05    280.0         1.000       -0.     0.      7
 20   .4997E+06   .2090E+05     .8000       .1619       2873.        69.56         1.000       -0.     0.      1
 21   .4958E+06   .2000E+05     .8000       .8333E-01   3921.       0.             1.000       -0.     0.     17
 22   .4954E+06   50.00         .2000       .1024       366.6        52.10         1.000       -0.     0.      1
 23   .4954E+06   50.00         .2000      0.           366.6       0.             1.000       -0.     0.     22
 24   .4954E+06   50.00         .2000      0.           0.          0.             1.000       -0.     0.     17
 NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.25.32.          PAGE    93

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.


                               MISSION TIME HISTORY                            PAYLOAD =      0.

                               ******INCREMENTAL*******      *********TOTAL**********
WEIGHT    MACH    ALTITUDE    RANGF   TIME(HRS)    FUEL      RANGE   TIME(HRS)    FUEL      OPTION

813302.   .206        50.     0.00       .083     1618.         0.       .08     1618.      17

824596.   .500      3000.     4.71       .022     4931.         5.       .11     6549.       1

823093.   .600      5000.     2.30       .006     1463.         7.       .11     8012.       1

816961.   .900     21500.    15.61       .036     6532.        23.       .15    14544.       1

812829.   .950     29000.    13.35       .025     4532.        36.       .17    19076.       1

791095.  1.500     40500.    74.37       .108    20134.       110.       .28    39210.       1

777499.  2.620     52971.    49.75       .044    14396.       160.       .33    53606.       1

735998.  5.950     67993.   360.71       .138    41509.       521.       .46    95115.       1

733333.  5.998     99120.    45.43       .013     2657.       566.       .48    97772.       1

733333.  5.998     99120.     0.00      0.000     2657.       566.       .48   100429.      21

733333.  5.998     99120.     0.00      0.000     2657.       566.       .48   103086.      22

530000.  5.092     99120.  5991.56      1.849   203333.      6558.      2.33   306419.       6

526041.   .800     20000.   439.18       .407     3159.      6997.      2.73   309579.       1

522081.   .820     20000.     0.00       .083     3959.      6997.      2.82   313538.      17

517495.   .800     45000.    31.28       .060     5386.      7028.      2.88   318924.       1

502577.   .800     45000.   200.01       .436    14918.      7228.      3.32   333842.       7

499705.   .800     20000.    69.56       .162     2873.      7298.      3.48   336715.       1

495417.   .200        50.    52.10       .182      367.      7350.      3.66   337081.       1


 NSEG II --- AIRCRAFT PERFORMANCE PROGRAM                              01/14/77            10.25.37.          PAGE    17

                                        LRC TEST PROBLEM NUMBER 3  -----  NSEG III
                                        ITERATE TO FIND INITIAL WEIGHT TO PROVIDE 7350 NM TOTAL RANGE
                                        FOR GIVEN FINAL WEIGHT.  IN-FLIGHT ENGINE SCALING REQUESTED.




                          END OF FILE READING DATA
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01/14/77  LRC ICOPS INDEPNDT 66000-131K 01/21/75F
10.19.16. ACCT - RATE IS EXCEEDED
10.19.16.GT83099.
10.19.16.                              LRC COMPUTER COMPLEX
10.19.16.JOB,01,200,110000,5000.            A4916    R
10.19.16.4322          100732         %LOG 1247A  CENT
10.19.16.USER.VAHL, WALTER A                        0209
10.19.16.10600N 37350
10.19.16.FETCH,A4916,,BINARY,,MISSION.
10.19.21.TIME          BG ATTACH
10.20.29.TIME          ED ATTACH
10.20.29.END     FETCH
10.20.30.DROPFIL,DCNS.ZOOKS.ZOUNDS.DAFILE.SDFILE.
10.20.32.MODE1.
10.20.32.MISSION.
10.25.39.STOP 77
10.25.39.REWIND(INPUT)
10.25.40.COPYCR(INPUT,DUMMY)
10.25.41.REWIND(DUMMY)
10.25.43.COPYSBF(DUMMY,OUTPUT)
10.25.44.COPYSBF(INPUT,OUTPUT)
10.25.45.SPPRINT(OUTPUT,3)
10.25.47.      0000476 O/S CALLS
10.25.47.CPU   133.491683 SEC.
10.25.47.PPU   125.886464 SEC.
10.25.47.CRU    17        RESOURCE UNITS
10.25.47.KWH      4.26     KILOWORD HOURS
20.20.40. GT83099.   6239 LINES PRINTED. LR27
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*U.S. GOVERNMENT PRINTING OFFICE: 1977 - 735-004/38

END

5.12.78